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COMMERCIAL FISHERIES REVIEW

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A. W. Anderson, Editor R. T. Whiteleather, Associate Editor
J. Pileggi and J. J. O'Brien, Assistant Editors

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JAPANESE 1952 NORTH PACIFIC SALMON-FISHING EXPEDITION

By Francis M. Fukuhara*

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INTRODUCTION

Under the provisions of the International Convention for the High Seas Fisheries of the North Pacific Ocean (signed at Tokyo May 9, 1952, but subject to ratification by Japan, Canada, and the United States), Japan agrees to abstain from fishing for the five species of Pacific salmon east of a provisional line of demarcation starting at the edge of territorial waters north of Atka Island, following meridian 175° west longitude and the International Date Line to Bering Strait, and ending at Cape Prince of Wales, Alaska. A protocol to the Convention further



FIGURE 1 - TYPICAL CATCHER BOAT OF THE TENYO MARU NO. 3 FLEET.

*FISHERY BIOLOGIST, PACIFIC SALMON INVESTIGATIONS, BRANCH OF FISHERY BIOLOGY, U.S. FISH AND WILDLIFE SERVICE, SEATTLE, WASHINGTON.

provides for scientific investigation to determine if there is intermingling of Asian and American stocks of salmon. If areas of intermingling are found, there are to be further studies to locate a line which will best divide salmon of Asian origin from those of American origin.

An initial step in determining the distribution of the salmon in the North Pacific Ocean was made possible by an invitation from the Government of Japan for the United States Government to send a technical observer to accompany the 1952 Japanese North Pacific Salmon Expedition. This invitation was not required of Japan by any previous agreement with the United States, but was made as a gesture of good will and cooperation. In response to this invitation, the Pacific Salmon Investigations of the U. S. Fish and Wildlife Service was directed to place a biologist aboard the mothership of the Taiyo Fishing Company Ltd. fleet. It was in this capacity that I was detailed aboard the mothership Tenyo Maru No. 2, accompanying the expedition from June 1 to July 18, 1952.

Transportation from Adak, Alaska, to the Tenyo Maru No. 3 was provided by the U. S. Coast Guard Cutter Sweetbriar. Removal from the Tenyo Maru No. 3 at the end of the assignment and transportation to Adak, Alaska, was facilitated by the U. S. Coast Guard Cutter Storis. Communication to and from the Tenyo Maru No. 3 was made possible through the facilities of the Seventeenth Naval District. Data of importance to the assignment were also supplied by this organization, and travel in the Aleutian Islands was expedited by the kind attention of its various members.

The hospitality extended, as well as the cooperation and aid rendered by the Chief Inspector of the Japanese Fisheries Agency and various members of the Taiyo Fishing Company fleet is gratefully acknowledged.

In cooperation with biologists of the Japanese Fisheries Agency, who worked on their own vessels, observations were made with the following objectives:

1. Identification of fish landed aboard the mothership and recording the amounts landed.
2. Selection of random samples from representative landings of salmon. Recording the length, weight, and sex and obtaining scale samples.
3. Collection of representative specimens.
4. Interview of fishermen to determine point of origin of fish and amount of fishing effort expended.
5. Observation of fishing methods, with notes on the catches of fish other than salmon.
6. Recording of weather, sea conditions, and surface water temperatures.
7. Notation of obvious differences in appearance of salmon landed or any change in appearance as the vessel moved from one position to another.
8. Securing of all possible information on methods of capturing live fish which could be used in a tagging experiment.

SOURCES OF DATA

Salmon catches aboard the mothership were checked periodically with an official of the company. Fishermen were interviewed daily to determine the point of origin of the fish. Point-of-origin data were secured from the fleet manager's office which received this information by radio from the catcher boats daily at 0600 and 0900 hours.

Several trips were made aboard the catcher boats to observe fishing methods and to determine the distribution of the salmon in the high seas by observing their distribution in the nets. Notes on non-salmon species were made from observations of these hauls and from observations of non-salmon fish brought to the mothership with the daily trips of the catcher boats.

Morphometric measurements of salmon were made of approximately 1,800 fish during the entire journey. Although an attempt was made to select random samples from a representative day's catch, this was not always possible for all work concerning this assignment was conducted so as not to interfere with the fish-handling operations. Therefore, it was not always possible to allocate time to the measuring of specimens when catcher boats with representative catches unloaded.

Scale samples from the measured fish were taken and are being analyzed. A separate report on the age composition of the catch will be prepared. A collection of 160 salmon was frozen and returned to Seattle. The fish were collected aboard the Tenyo Maru No. 3, and when the three fleets were dispersed, specimens were collected aboard the motherships of the remaining two fleets. Meristic counts of the respective species of this sample will be made and the results reported later. Information on methods of tagging fish were obtained in conversations with the Chief Inspector of the Japanese Fisheries Agency.

All specimens measured were selected at random from the catches of single catcher boats. This greatly simplified the establishment of the exact position at which these fish were taken, but on some days it was obvious that at best the salmon selected were representative only of the catch of the particular catcher boat from which the fish were selected, and not at all representative of the entire catch of the fleet for the day. On these days the average size of the fish in the catches from various catcher boats differed noticeably. This situation occurred frequently between June 3 and June 13 while the fleet fished the waters south of Kiska Island and from June 16 to June 30 while the fleet operated in waters south of Agattu Island and westward to 170°E. meridian, and was especially noticeable in the chum salmon.

FISHING FLEETS

Three Japanese salmon-fishing fleets sailed from Hakodate, Hokkaido, Japan, on May 1, arrived at the fishing grounds on May 10, and began operations on May 11, 1952. The largest of these was the fleet of the Taiyo Fishing Co. Ltd., which consisted of the mothership Tenyo Maru No. 3 and 30 catcher boats (fig. 1). Damages resulting from rough seas reduced the number of catcher boats to 27. Three exploratory vessels left Japan five days in advance of the departure of the main fleet. The Nichiro Fishing Co. and the Nippon Marine Products Co. fleets each consisted of 1 mothership, 10 catcher boats, and 2 exploratory vessels. Catch data from the latter two fleets were secured, but precise data concerning operations and disposition of those fleets were unavailable during the voyage. Three Japanese Government Fisheries Inspection vessels patrolled the fleets, and were also engaged in tagging operations and oceanographic investigations.

THE TENYO MARU NO. 3

The Tenyo Maru No. 3 is a 330-ft. whale-rendering ship, with a net tonnage of 3,689, and powered by Diesel engines with a combined rating of 2,250 hp. Three 50-ton compressors refrigerate the sharp-freeze compartments and the holds. Sharp-freeze compartments have a capacity of 54 tons per day. The total capacity of the four refrigerated holds is 2,225.94 cubic meters.

The Tenyo Maru No. 3 was equipped with conventional navigating instruments:

1. Gyro-compass with repeaters on flying bridge, captain's bridge, and in the wireless room for use with the radio direction-finder.
2. Marine radar, which proved invaluable due to inclement weather and the nature of the fishing operation.
3. Although equipped with a loran receiver, reception was very poor in the area of operation and further complicated by almost unceasing transmission by the ship's wireless. Loran readings were, whenever possible, supplemented or confirmed by "sun-sights"--sextant readings were taken at every opportunity, for with few exceptions, the weather conditions were such that extreme alertness was required of the officers on watch to get two or even one "fix" daily.
4. A radio direction-finder was used for checking the bearings of the catcher boats, this being done only on very foggy days and on occasions when the mothership drifted extremely far out of position.

No soundings were taken during the entire voyage, the only available instrument for this purpose being a sounding line, the use of which was unfeasible due to the great depths of the waters in which the fleet operated. The sounding line was utilized occasionally in lowering a reversing thermometer attached to a Nansen water bottle to determine subsurface temperatures. Drift was calculated by checking dead-reckoning position against observed position.

FISHING AREA

The fishing area of this expedition was designated by the Japanese Government, and limited the operations of the fleets to waters bounded by lat. 50° N. and lat. 55° N. and long. 177° W. and 170° E. (fig. 2). The catch in this area fell below expectation and consequently on July 3 the Japanese Fisheries Agency enlarged the fishing area to include waters bounded by the lines intersecting at the following points: lat. 53° N. and long. 170° E.; lat. 53°30' N. and 163° E.; lat. 48° N. and 156° E.; lat. 48° N. and 170° E.; lat. 50° N. and long. 170° E. Although the greater part of the area originally authorized lay in the Bering Sea, fishing was confined to the North Pacific Ocean.

Fishing efforts were concentrated most heavily in two general areas. From May 11 to June 13 the three fleets fished the waters bounded by lat. 50°30' N. and lat. 51° N. and long. 177° E. and 178°20' E., the locus of which is 400 miles south of Kiska. From June 5 to June 14 of this period a supply ship of the Taiyo Fishing Company Ltd., serving as mothership for seven catcher boats, fished waters southeast to southwest of the Near Islands. The fleets moved westward, and from June 15 to June 26 activity was concentrated in the waters south of Agattu Island bounded by lat. 51° N. and lat. 52° N. and long. 170° E. and long. 171° E. On June 26 the fleet moved westward. With the authorization of the new fishing area, fishing was conducted west of long. 170° E. between lat. 52°15' N. and 50°20' N.

CATCH

A total salmon catch up to July 18 of 828,888 fish was reported by an official of the Tenyo Maru No. 2 fleet. However, computed by the addition of catch

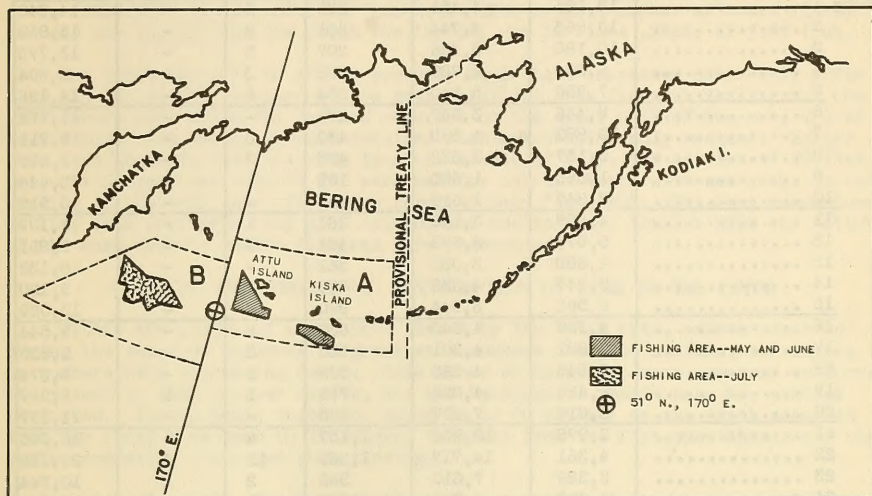


FIG. 2 - THE NORTH PACIFIC OCEAN AND BERING SEA, SHOWING JAPANESE SALMON FISHING AREAS IN 1952.

data transcribed from the catcher-boat journals for June 1-July 18 and added to figures of the catch from May 11-May 31 obtained from another source, the total catch amounted to 750,265 fish (table 1). A discrepancy of 78,623 fish exists between the two totals. A small part of this discrepancy is accounted for by the occasional absence of entries in the journals of the catcher boats. The catch of the exploratory vessels is also excluded from this total, for no data was obtainable from these vessels. The remaining part of the discrepancy has so far not been fully explained.

The catches of the other two fleets operating in 1952 are given in tables 2 and 3.

CATCH PER-UNIT-OF-EFFORT

Drift gill nets were used exclusively in the fishing operations. One unit of gear is called a "tan" (shackle) and has an area of .25 acres. The records of six catcher boats selected at random were used in the computation of the catch per unit of effort (table 4). On some days the operators of these catcher boats neglected to enter part of the data, and in the computations these days were excluded. In the 48 days for which data on these vessels are available, none omitted entries on more than 5 days. The number of hours fished per set is considered to be the period between the time the first "tan" entered the water, initiating the set, to the time the last "tan" was out of the water, terminating the retrieving of the gear.

The unit of effort used in the calculations is the tan-hour. The average number of tans per set is 134.5, obtained by dividing the total number of tans by the total number of sets (table 4). Multiplying this by the total number of hours fished (table 4) gives the total number of tan-hours, which is 456,139. Dividing the total catch for the 6 boats of 128,538 fish by the total number of tan-hours gives .2818 fish as the catch per tan-hour. The average number of hours fished per day was 14, so that the catch per tan-day was 14 times .2818, or 3.95 fish.

The catch per unit of effort probably would have increased noticeably after July 14, but due to the wear of the gear resulting from frequent fouling and the consistency with which the catches occurred on the upper half of the net, the effectiveness with which the mesh retained fish was considerably reduced. Larger runs were known to have occurred from the middle of July, for catches of 20 fish per unit of gear per night's set were made by catcher boats with new gear. In the hauling of the worn gear, fishermen reported many fish lost. The runs encountered at this time were primarily pink salmon, and due to their smaller size the failure of the worn mesh to retain fish was more pronounced.

VERTICAL AND HORIZONTAL DISTRIBUTION OF FISH IN THE CATCH

Within the limits of the depths fished by the drift nets, salmon occurred during the hours of darkness in greatest abundance near the surface, decreasing in numbers with increasing depth. Cold winds or turbulent seas appeared to force the salmon to seek greater depths, but the tendency to remain near the surface persisted. In all hauls observed, about 85 to 90 percent of the catch occurred from the float line down to 10 meters. Reports from the fishermen throughout the entire operation confirmed this finding.

A wide dispersal of salmon in the high seas was indicated by the horizontal distribution of the fish in the gear. From May 11 to June 14 little grouping of salmon was reported by the fishermen, the fish being distributed at random across the entire length of the net. Distinct grouping of the salmon later became apparent in fish taken from the waters south and southwest of Agattu Island.

Observations of two hauls in this general vicinity were made. The entire catch of one haul was taken on 75 of the 100 units of gear set. Fourteendistinct groups of salmon occurred at irregular intervals, each group composed of 10 to 15 fish spread widely over a unit of gear. These groups were not often homogeneous as to species.

A second haul at another location was made from a power launch drifting 20 units of gear. The entire catch of this haul was taken on the upper half of the net and the fish were distributed horizontally at almost regular intervals--approximately three fish to a "tan." The five pink salmon captured in this set were found to be distributed on one "tan" of gear. No noticeable grouping of red salmon was observed.

RED SALMON (*Oncorhynchus nerka*)

The daily catch of red salmon by the Tenyo Maru No. 3 fleet is shown in figure 3.

Red salmon predominated in the catch from the waters of the area south of Kiska Island. The bulk of these red salmon presented a slender appearance. The average length of specimens measured between June 3 and June 9 was 21.77 inches; the average weight of these same specimens being 5.34 pounds. The stomachs of all fish taken from these waters were markedly distended. Superficial analysis

Table 2 - Daily Salmon Catch, Fleet X, 1952

Date	Red	Chum	Pink	King	Silver	Total
	(Number of Fish)					
May 11-31	1/	1/	1/	1/	1/	52,595
June 1	3,379	1,541	76	1	-	4,997
2	5,916	3,120	202	-	-	9,238
3	5,636	1,491	117	-	-	7,244
4	4,976	1,888	205	-	-	7,069
5	4,811	1,275	149	-	-	6,235
6	5,429	1,992	261	5	-	7,687
7	4,530	1,033	134	2	-	5,699
8	6,494	2,082	455	2	-	9,033
9	2,603	1,605	146	-	-	4,354
10	358	234	14	-	-	586
11	291	383	64	-	-	738
12	1,351	951	82	-	-	2,384
13	2,007	1,278	164	-	-	3,449
14	1,650	980	344	1	2	2,977
15	1,162	1,216	197	1	-	2,576
16	1,413	2,881	542	-	-	4,836
17	1,549	3,323	310	1	-	5,183
18	991	1,084	80	1	-	2,156
19	1,430	1,968	488	1	-	3,887
20	1,224	2,772	429	3	1	4,429
21	1,135	4,129	452	1	1	5,718
22	890	6,082	1,010	-	6	7,988
23	1,158	6,908	854	5	8	8,933
24	264	469	62	-	-	795
25	1,245	2,114	331	1	5	3,696
26	1,661	1,564	691	4	8	3,928
27	1,278	3,342	1,069	1	2	5,692
28	1,697	3,735	1,115	2	-	6,549
29	2,618	2,330	1,243	1	1	6,193
30	1,870	2,768	442	2	1	5,083
July 1	1,893	2,984	659	1	9	5,546
2	3,344	3,201	1,417	1	18	7,981
3	2,248	806	309	-	5	3,368
4	2,391	823	255	-	8	3,477
5	4,197	1,914	2,399	1	9	8,520
6	4,234	1,145	2,612	3	3	8,197
7	5,314	2,366	3,658	20	9	11,367
8	1,976	1,041	1,011	12	5	4,045
9	2,669	1,332	3,006	13	7	7,027
10	2,310	867	1,181	5	25	4,388
11	2,688	1,003	2,091	8	17	5,807
12	1,506	1,168	4,619	13	64	7,470
13	3,065	1,905	7,692	10	56	12,728
14	2,927	1,342	4,792	9	103	9,173
15	2,213	1,112	7,377	11	49	10,762
17	1,935	1,153	9,551	11	79	12,729
Total June 1-July 17	116,006	90,700	64,557	153	501	271,918
Grand Total	1/	1/	1/	1/	1/	324,513

1/BREAKDOWN BY SPECIES NOT AVAILABLE.

1/11 NONE.

NOTE: NO CATCH SHOWN FOR JULY 16.

Table 3 - Daily Salmon Catch, Fleet V, 1952

Date	Red	Chum	Pink	King	Silver	Total
	(Number of Fish)					
May 11-31	1/	1/	1/	1/	1/	82,794
June 1	4,629	1,951	84	-	-	6,664
2	4,972	2,032	137	-	-	7,141
3	6,755	2,404	125	3	-	9,287
4	4,700	1,751	108	-	-	6,559
5	3,269	2,456	201	-	-	5,926
6	3,819	3,255	310	-	-	7,384
7	3,993	1,343	103	-	-	5,439
8	3,893	3,417	273	1	-	7,584
9	2,151	1,865	107	-	-	4,123
10	748	907	17	-	-	1,672
11	1,212	1,422	193	-	-	2,827
12	1,837	2,151	158	-	-	4,146
13	1,853	2,771	210	-	-	4,834
14	3,112	3,501	163	-	1	6,777
15	3,251	3,464	521	3	-	7,239
16	2,144	3,692	465	-	-	6,301
17	1,582	3,629	399	-	-	5,610
18	594	900	35	-	-	1,529
19	1,216	1,717	460	-	1	3,394
20	1,584	1,698	454	2	-	3,738
22	1,992	2,846	490	-	1	5,329
23	1,524	4,565	684	-	-	6,573
24	518	793	114	-	1	1,426
25	2,732	3,313	470	-	-	6,515
26	2,641	3,900	1,378	-	2	7,921
27	2,404	3,350	1,789	-	5	7,548
28	3,639	3,453	1,870	-	5	8,967
29	3,425	3,229	2,570	6	33	9,263
30	3,238	1,493	358	5	1	5,095
July 1	4,099	2,570	1,524	5	23	8,221
2	2,817	2,413	2,162	2	25	7,419
3	2,300	1,095	715	2	3	4,115
4	3,417	775	290	3	11	4,496
5	3,565	2,116	3,007	14	15	8,717
6	2,650	1,529	3,024	2	18	7,223
7	4,021	1,670	3,343	34	5	9,073
8	2,215	1,544	1,671	23	33	5,486
9	3,439	1,305	3,293	23	32	8,092
10	7,216	1,086	2,203	3	32	10,540
11	2,667	780	2,462	1	8	5,918
12	2,636	1,409	6,318	4	36	10,403
13	1,732	1,271	3,346	3	39	6,391
14	722	1,370	2,337	9	58	4,496
15	1,763	1,623	4,713	35	44	8,178
16	1,496	1,430	6,540	22	58	9,546
17	1,688	1,378	8,198	19	123	11,406
Total June 1-July 17 ..	127,870	98,432	69,392	224	613	296,531
Grand Total	1/	1/	1/	1/	1/	379,325

1/BREAKDOWN BY SPECIES NOT AVAILABLE.

" - NONE.

NOTE: NO CATCH SHOWN FOR JUNE 21.

showed that the stomachs of the red salmon contained squid up to five inches in length, adult lantern fish (family Myctophidae) up to five inches in length, larval lantern fish with yolk sacs still attached, and several species of adult and larval crustaceans.

Data obtained from interviews with fishermen indicated a considerable randomness of movement of the fish in this area. Throughout the month of May the fish

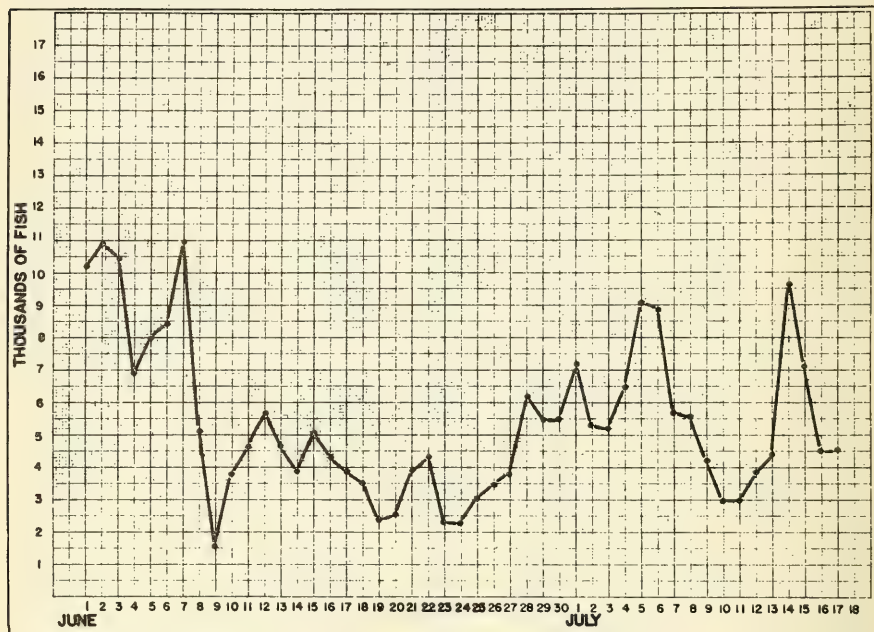


FIGURE 3 - RED SALMON CATCH OF TENYO MARU NO. 3 FLEET, JUNE 1-JULY 18, 1952 (IN NUMBERS OF FISH PER DAY).

were frequently caught in equal numbers on both faces of the net, regardless of the direction of the set. From June 1 to June 8, randomness was still evident, the fish approaching from the N., NE., ENE., ESE., S., SW., and W. From June 9 the direction of approach of the fish was from the south to the east.

On June 14 the composition of the catch changed, with the number of red salmon decreasing and the number of chum salmon increasing (fig. 4). Also, an abrupt difference in the body proportions of the red salmon was noticed. Red salmon caught on that day were noticeably stouter and deeper-bodied than those previously encountered. The average length between June 14 and June 20 was 22.15 inches and the mean weight 6.2 pounds. Red salmon showing greater depth through the body from dorsal to ventral surface persisted in all catches until July 5.

Red salmon taken on June 14 and 15 were feeding very lightly or not at all. Heavy feeding was indicated in all of these fish landed from June 16 to July 18. Stomach contents of these fish showed a marked decrease in squid, and lantern fish were no longer seen. Many of the stomachs of salmon taken in the fishing area south of Agattu contained juvenile cod (species unknown).

On June 28 red salmon regained predominance over the chum salmon and retained it until July 19. A decrease in the number of the stouter-bodied red salmon was noticeable with this change in catch composition. No detailed study concerning the

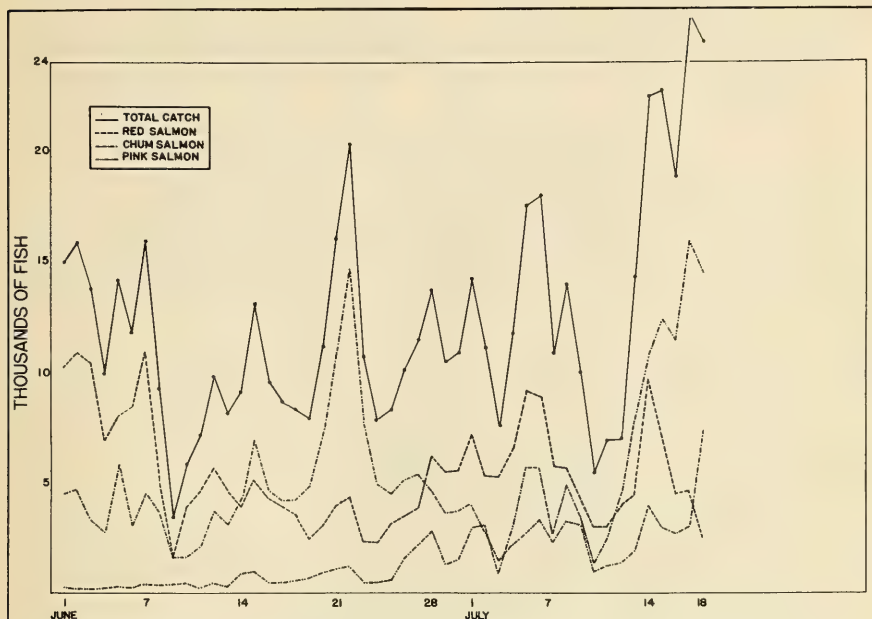


FIG. 4 - TOTAL CATCH OF IENYO MARU NO. 3 FLEET, JUNE 1-JULY 18, 1952 (IN NUMBERS OF FISH PER DAY BY SPECIES).

sexual maturity of these fish was attempted, but a great variation in the extent of ovary development was observed. Ovary lengths were from 7 cm. to 12 cm. and the diameter of single eggs ranged from 1.1 mm. to 4 mm. No fully mature specimens were encountered at any time.

In the areas fished south of Kiska Island and south of Agattu Island, red salmon 12 inches long and under were occasionally taken. Although few of these were brought aboard the mother-ship, all specimens were males, the gonads of which were noticeably undeveloped, presenting the appearance of a string. On the evidence of the few specimens examined these fish were juvenile rather than precocious males.

Table 4 - Salmon Catch-Effort Data for Six Selected Catcher Boats

Catcher Boat	No. of Sets	Total No. of Hours Fished	No. of "Tans" of Gear Set	No. of Fish Caught
1	41	571.42	5,735	20,560
2	38	514.25	4,875	21,130
3	40	539.11	4,700	14,511
4	44	644.42	6,255	29,264
5	39	535.75	5,550	20,873
6	40	586.42	5,435	22,200
Total	242	3,391.37	32,550	128,538

CHUM SALMON (*Oncorhynchus keta*)

A peak in the catch of this species occurred on June 22 (fig. 5). No difference in the general appearance of the chum salmon was detected as the fleet moved from one fishing area to another. Variation in the size of the chum salmon

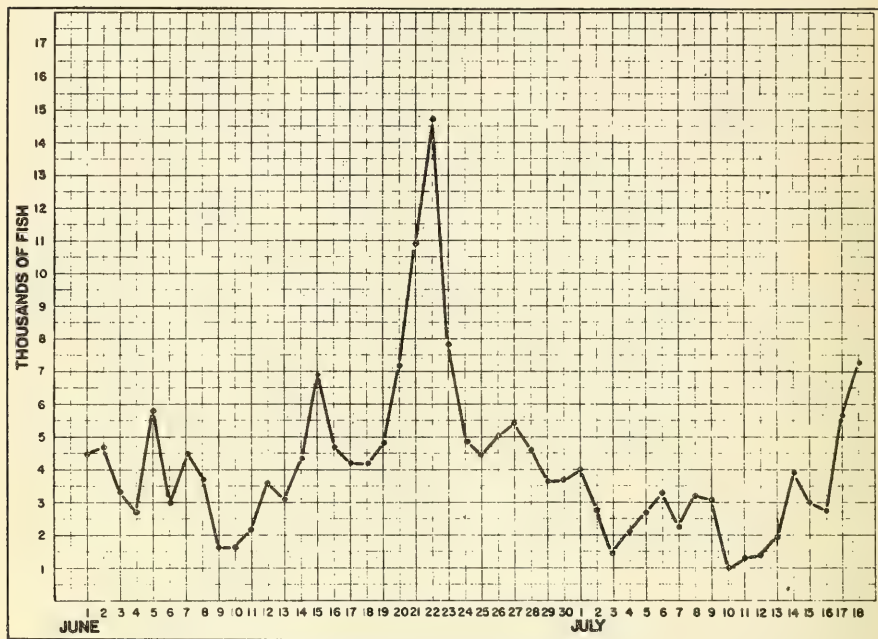


FIG. 5 - CHUM SALMON CATCH OF TENYO MARU NO. 3 FLEET, JUNE 1-JULY 18, 1952 (IN NUMBERS OF FISH PER DAY).

caught was striking in the area south of Kiska Island. On June 19 the variation in size became less noticeable. Average size of the fish (average length 21.1 inches and weight 4.1 pounds) appeared to be less than that of the chum salmon taken previously in waters south of Kiska Island (average length 22.1 inches and weight 5.1 pounds). Beginning July 1 a great variation in the size of the fish in the catch became apparent, and although small chum salmon were still present, the number of salmon with a length greater than 23.6 inches increased. The average length of the chum salmon measured from July 5 to July 16 was 19.8 inches and the average weight was 5.0 pounds.

All stomachs examined showed evidence of heavy feeding until June 26. On superficial examination, stomachs were found to contain large amounts of mysidaceans with lantern fish and squid occurring less frequently than in the stomachs of the red salmon. Almost no food was evident in most specimens taken from June 27 to July 4.

A great variation in size of chum salmon was evident in the catches from July 1 to July 18; there was seemingly a greater proportion of large specimens (23.6 inches or longer) on days when the catch of chums was relatively large.

Invariably the stomachs of larger specimens were empty or nearly so, while those of the smaller specimens contained large amounts of food.

As with the red salmon, great variations in the degree of gonad development were evident in the chum salmon taken in waters south of Kiska between June 1 and June 14. The degree of sexual maturity of chum salmon taken from waters south of Agattu Island from June 26 to June 30 was uniform. Ovary lengths during this period measured approximately 12 cm. and the diameter of the eggs ranged from 1.5 mm. to 3 mm.

PINK SALMON (*Oncorhynchus gorbuscha*)

The differences detected in the external appearance of the pink salmon were due to the lateness of the season and corresponding maturity rather than specific differences related to the locality in which they were taken. Pink salmon did not appear in the catch until May 30 in the area south of Kiska Island. Their relative numbers in the catch were low and fluctuated from day to day. No secondary sexual characteristics were apparent in the fish taken south of Kiska Island between June 1 and June 14.

As the fleet moved westward to the fishing area south of Agattu Island, the catches of pink salmon increased (fig. 6). A sudden increase occurred on June 26, and the increase continued until on July 14 they predominated, making up more than half the catch on July 15 and July 18.

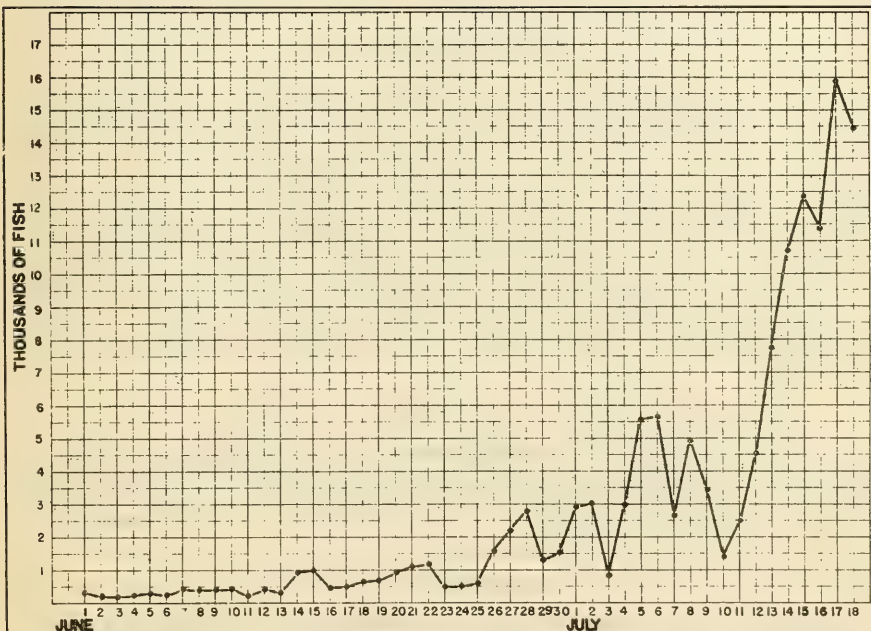


FIGURE 6 - PINK SALMON CATCH OF TENYO MARU NO. 3 FLEET, JUNE 1-JULY 18, 1952 (IN NUMBERS OF FISH PER DAY).

Pink salmon with humps began to appear on July 1, but in relatively small numbers at that time. Beginning July 4, an increase in the number of humped-back specimens occurred. The pink salmon taken after July 7 with few exceptions were humped, and scattered individuals showed crimson mottling on the pelvic and caudal fins. Feeding was extremely heavy in all specimens examined throughout the period of observation. Only 14 of the 345 specimens measured and examined were females. Gear with smaller mesh, set by the Fisheries Inspection vessels, caught a relatively larger number of females than the fishing fleet. This indicates the presence in the area of females not taken in the regular catch because of the selectivity of the gear fished. Females only 10 to 12 inches long were also taken occasionally on hand lines with hook and bait.

KING AND SILVER SALMON

King salmon (*Oncorhynchus tshawytscha*) from the start of the fishing operation were caught in small numbers throughout the season. Those taken in May and in the early part of June were large, weighing up to 35 pounds. The average weight of immature specimens taken subsequently was approximately 15 pounds. No measurements or other observations were made of king salmon for they occurred in relatively small numbers and the handling of them was such that they were not always recognizable when mixed with a large load of red salmon or chum salmon.

Silver salmon (*O. kisutch*) occurred in the catches only erratically after June 18; they were few and hardly noticeable in the landings. As in the case of the king salmon, no special observations were made of the silver salmon.

SPECIES OTHER THAN SALMON

Several species of fish other than salmon were taken but never in great quantity for an extended period. Mackerel sharks (*Lamna nasus*) were taken occasionally. These sharks averaged approximately 5.5 feet in length and whenever caught did extensive damage to the gear. Greenlings (*Pleurogrammus* sp.) were taken in small numbers in the waters south of the Aleutian Islands, but occurred frequently and in considerable numbers in the gear of catcher boats fishing in waters close to the Near Islands. One arrow-toothed halibut (*Atheresthes stomias*) measuring 20 inches was taken in a drift net fishing south of Kiska in waters roughly 3,000 fathoms deep. Ragfish (*Acrotus willoughby*) were taken occasionally in widely scattered areas. One species of cod (*Theragra chalcogramma*) occurred in the catches while the fleet fished west of 170° E. longitude. No accurate record could be kept of the relative abundance of these species for all but the ragfish were utilized as food by the fishermen; consequently, they rarely arrived aboard the mothership.

PARASITES

No tapeworms were found in the stomachs of the red, chum, and pink salmon until July 5. The number of specimens infested with tapeworms increased sharply within a few days. On July 16 a total of 80 red, 80 chum, and 80 pink salmon were examined. About 30 percent of the red, 50 percent of the chum, and 100 percent of the pink salmon were infested.

DAYLIGHT FISHING

Occasionally gear was set during the daylight hours. Little or no success resulted from operations until July 16, when some of the vessels were operating in the western area. Catches of seven fish per "tan" were made in this area during the daylight hours. Possibly perception of the gear by the salmon accounts for the low catches made in daylight sets. On moonlight nights fish were seen grouped on one side of the gear, swimming along its length and avoiding the net.

Similar occurrences were reported by many fishermen, some of whom made attempts to drive the fish into the nets on these occasions. Observations and reports of this nature occurred only after July 5; weather and sea conditions before this would not permit such observations.

DATA PERTINENT TO A TAGGING PROGRAM

Biologists on vessels of the Japanese Fisheries Agency conducted tagging operations. Great difficulty was encountered in capturing salmon in large enough quantities and in good enough condition to tag and release. Initially fish were captured with gill nets, but the fish were in too weak a condition to release. Attempts were made to patrol the net and remove the fish within a short time after capture, but due to rough seas and darkness this procedure was abandoned. Most fish captured for tagging by the Japanese were taken on long lines, set during the daylight hours, using salmon meat as bait. Few fish were captured by this method: only 2,000 fish were reported tagged and released up to July 18, or 29 fish per day. Records of the exact number of each species were unobtainable. The amount of effort expended in the capture of fish for tagging or the time devoted to it was not learned, although the fishery biologist in charge expressed concern over the lack of fish taken for tagging. Although the long line did not take fish in great quantity, the fish taken were said to be in much better condition for release than those taken by gill nets.

Few fish taken in the hauls of the catcher boats were in suitable condition for tagging. In one operation, 89 red salmon, 456 chum salmon, and 47 pink salmon were taken on 100 "tans" of gear. All pink salmon were dead or nearly so when landed. Chum salmon were alive, but all were exhausted and 60 seconds after landing the only signs of life seen were in an occasional movement of the operculum or quivering of the pectoral fin. Roughly 80 percent of the red salmon in this haul were in a weakened condition. But 20 percent of the red salmon of this catch were extremely lively, vigorously resisting the fishermen's grasps and flipping with considerable vitality for 90 seconds after landing.

Ten injured fish were taken in this haul. Injuries seemed to have been inflicted by sharks and sea birds, both of which were frequently caught in the nets. Three fish were brought aboard with heads completely bitten off. Injuries to the remaining seven consisted of stabs or gashes on the abdomen in the region near the caudal peduncle. The webbing seemed to cause little or no injury to the operculum or gills, but the smaller fish (all of which were snared at the anterior insertion of the dorsal fin) were invariably weak or dead when landed. In subsequent hauls observed aboard other catcher boats, all fish taken were unsuitable for tagging.

In calm seas and in good weather a power launch from the Tenyo Maru No. 3 fished waters within five miles of the mothership, setting 20 "tans" of gear. In one haul 56 fish were taken consisting of 50 red salmon, 5 pink salmon, and 1 chum salmon. The pink and chum salmon were unsuitable for tagging, for all were near death. The 50 red salmon in the catch were all lively, with more than 50 percent in good condition for tagging and release.

Catch records indicate the need for the setting of at least a mile of net to capture 60 fish. From observation it could not be determined during which hours the salmon were actually ensnared. On two occasions, while the catcher boat inspected the set, salmon could be seen striking the gear near the float line. On two other occasions no fish encountering the gear were apparent during the inspection run and it was evident from the vitality of many of the fish landed in these hauls that they became ensnared during the early morning hours. Therefore, the

possibility of good results from retrieving a mile of drift net fished for short hours without inspection of the gear is questionable. But as mentioned previously, inspection of gear can become difficult during inclement weather with heavy seas, and would be further complicated by the necessity for conducting all operations during the hours of darkness.

CONCLUSIONS

The observations made on this assignment were limited by the nature of the facilities and the necessity for conducting the biological study incidentally to a commercial fishing enterprise. It would be premature to venture a firm opinion as to the origin of stocks encountered on the basis of studies for a single season. Nevertheless, several observations indicate a mixing of stocks in the vast expanse of the area fished.

Diverse degrees of gonad development were consistently observed in red and chum salmon examined in daily landings throughout the duration of the assignment. These degrees of development seem to indicate distinct stocks or age classes of salmon, rather than deviations within a common stock.

The chum salmon taken in waters south of Kiska before June 14 were relatively small and feeding heavily. The appearance of a greater percentage of large chum salmon on days when the total chum salmon catch was relatively large suggested a migrating stock of large chum salmon passing through an area in which a stock or stocks of smaller chum salmon were feeding, for the percentage of feeding individuals on these days was noticeably less and invariably the stomachs of the larger chum salmon were found to be empty or nearly so.

Red salmon constituted the largest percentage of the landings from the waters south of Kiska Island. On June 14 as the fleet approached the waters south of Agattu Island, the catch composition changed abruptly, and chum salmon predominated in the catches.

The small amount of research into the biology of the Pacific salmon in its oceanic habitat and the limited facilities with which the duties aboard the Tenyo Maru No. 3 were conducted leaves only recourse to theories. The rate of gonad development of salmon in the oceanic habitat has not been determined. Therefore, spawning in the current year by individuals possessing immature gonads is possible but improbable.

The nature of group behavior of salmon in the high seas is unknown. The pre-supposition that a stock of salmon maintains its identity as a group throughout the entire duration of oceanic migration might well be erroneous, for the apparently great dispersal of the salmon as evidenced by their distribution on the gear gives no marked indication of schooling. It is possible that the indication of dispersal of salmon in the high seas from observation of the pattern of the catch on the gear may be misleading, for the disturbance created by fish snared in the gear alters the distribution of the other fish.



USE OF FISH IN NEW ENGLAND SCHOOLS INCREASED BY DEMONSTRATIONS

By B. E. Lindgren* and R. P. Seifert**

BACKGROUND

Since fish is a traditional food in New England, it is not surprising to find that it is widely used in the area's school cafeterias. However, even New England



FIG. 1 - SCHOOLS ARE A MARKET FOR FISH.

dealers may be surprised to learn that surveys show a large proportion of their schools are now serving an average of 900 pounds of fish (round weight) per school year. Effectiveness of the 38 fish-cookery demonstrations which were presented in the area during 1950 and 1951 by the Commercial Fisheries Branch of the U. S. Fish and Wildlife Service is demonstrated by the increase in fish consumption in those schools represented at the meetings.

These fish-cookery demonstrations for school-lunch personnel in New England were given in Maine, New Hampshire, Vermont, Rhode Island, and Connecticut.

Presented as a part of the Service's national program to develop markets for fishery products, they affected the eating habits of nearly 90,000 children, or 60 percent of those eating in the school lunchrooms of these five states.

To determine the value of the program in these states in increasing the use of fish in the schools represented, a comparison was made between periods before and after the demonstrations. As a control, a similar comparison was made in schools not represented but otherwise comparable.

FISH CONSUMPTION INCREASED

It was found that before the demonstrations the average school represented at the meetings in these five New England states served fish 1.7 times per month. After the demonstrations, these schools increased their use of fish to 2.7 times per month—a 59-percent increase. In the same period, schools whose personnel had never seen a demonstration showed only a 14-percent increase, raising their average number of times fish was served per month from 1.4 to 1.6 times. Thus, the over-all result of the demonstrations in the five states was a net gain of 45 percent in the frequency with which fish was used by those 706 schools represented.

Even the increases in the use of fish in those schools which were not represented at a demonstration can be par-

*FISHERY MARKETING SPECIALIST,
BOSTON, MASS.
**COMMODITY INDUSTRY ANALYST,
WASHINGTON, D. C.

EDUCATIONAL AND MARKET DEVELOPMENT SECTION,
BRANCH OF COMMERCIAL FISHERIES,
U. S. FISH AND WILDLIFE SERVICE.

1/DURING 1949 A SIMILAR PROGRAM OF DEMONSTRATIONS WAS PRESENTED IN MASSACHUSETTS. A REPORT ON THE RESULTS APPEARED IN COMMERCIAL FISHERIES REVIEW, APRIL 1951, PP. 34-6.

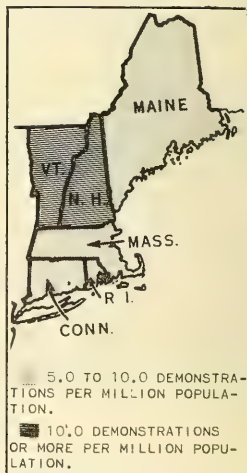


FIG. 2 - CONCENTRATION OF DEMONSTRATIONS IN NEW ENGLAND STATES.

tially attributed to the program, according to the school-lunch directors of several states. After the demonstrations, all of the state directors did more to encourage the use of fish. Fish recipes especially designed for school use were provided by the Fish and Wildlife Service for distribution to the school-lunch managers who were not able to attend a demonstration. These efforts were particularly effective in New Hampshire and Rhode Island. However, actual representation at a demonstration, as the net gains showed, was much more effective in increasing a school's use of fish.

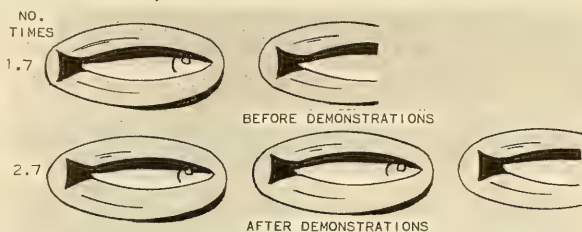


FIG. 3 - AVERAGE TIMES PER MONTH FISH WAS SERVED IN MAINE, NEW HAMPSHIRE, VERMONT, CONNECTICUT, AND RHODE ISLAND SCHOOLS REPRESENTED AT FISH-COOKERY DEMONSTRATIONS.

PROCEDURE FOR CONDUCTING DEMONSTRATIONS

This program was carried out by a Home Economist and a Fishery Marketing Specialist of the Service, with the help of the personnel of the Department of Education in each State. As a result of this excellent cooperation and assistance, each demonstration was attended by an average of 50 school-lunch cooks and managers.

Economy and ease of preparation are two "musts" for any food served in school cafeterias. Therefore, economical (within the reach of the average school budget) fish and kitchen-tested recipes (especially designed for school use) were chosen for the demonstrations. The six recipes included oven-fried fillets, fillets baked in an oil sauce, fillets baked in Spanish sauce, a fish loaf or roll, creamed fish, and a fish salad.



FIG. 4 - A TYPICAL DEMONSTRATION.

At each meeting, in addition to instruction in fish preparation, the audience received information on the nutritive value of fish, its local availability, purchasing hints, and suggestions for proper storage. The manager of each school was furnished recipes and other fishery publications to take back to her own lunchroom.

Although the organization and presentation of the demonstrations were similar in each of the five states,

the result, number of demonstrations, and schools represented differed in each.

RHODE ISLAND: In this State, 57 schools sent representatives to the 7 demonstrations given there early in the fall of 1950. To determine the increase in their use of fish, a survey was made of the menus and records of 32 of these schools for comparable periods in 1949 (before the demonstrations) and in 1950 (after the demonstrations). Schools represented at the demonstrations showed an increase of

73 percent in the number of times fish was used per month and a 70 percent increase in the average amount of fish used per month. In comparison, 14 schools not represented at the demonstrations showed increases in the same period of 22 percent in frequency of use and 41 percent in the amount used. Thus, the net gain in the represented schools was 51 and 29 percent, respectively (see table 1). The demonstrations in Rhode Island were given at: Woonsocket, Providence, Warwick, Howard, Peace Dale, Westerly, and Newport.

Table 1 - Results of Rhode Island School-Lunch Program Fish-Cookery Demonstrations

Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
For Schools:						
Represented	1.5	2.6	+73	21.4	36.5	+70
Not Represented	0.9	1.1	+22	18.5	26.1	+41
Net Gain for Represented Schools			+51			+29

CONNECTICUT: A total of 9 fish-cookery demonstrations for school-lunch cooks and managers was given in Connecticut during the late fall of 1950. Table 2 shows the results of a post-demonstration survey which was carried out in the same manner as the one in Rhode Island. Schools represented at these demonstrations showed a net gain of 22 percent in the number of times fish was used in school lunches and a net gain of 44 percent in the average amount of fish used. The survey was made in 57 of the 102 Connecticut schools which took part in the demonstrations, and in 26 schools that did not attend. The school-lunch demonstrations were held in Connecticut at: Hartford, West Hartford, Stamford, Willimantic, Torrington, Redding, New London, New Haven, and Waterbury.

Table 2 - Results of Connecticut School-Lunch Program Fish-Cookery Demonstrations

Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
For Schools:						
Represented	2.3	3.1	+35	32.2	51.1	+56
Not Represented	1.6	1.8	+13	29.9	33.4	+12
Net Gain for Represented Schools			+22			+44

In addition to the nine school-lunch demonstrations, a demonstration was presented in the Capitol's cafeteria at Hartford to a group managing 24 State institutions.

MAINE: Schools represented at the demonstrations in Maine showed a greater net gain in their use of fish than any of the other five states covered in this report. As shown in table 3, this increase amounted to 60 percent in frequency of use and 49 percent in the average amount used. There were 111 schools represented at the demonstrations in Maine during 1951. The survey was conducted in 60 of these, with an additional group of 28 schools surveyed as a control group. The demonstrations were held in: Portland, Bangor, Norway, Augusta, Presque Isle, and Pittsfield.

Table 3 - Results of Maine School-Lunch Program Fish-Cookery Demonstrations

Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
For Schools:						
Represented	2.0	3.3	+66	34.1	52.8	+55
Not Represented	1.8	1.9	+ 6	30.2	32.0	+ 6
Net Gain for Represented Schools			+60			+49

VERMONT: The 11 demonstrations in Vermont had representatives from 115 schools. The use of fish before and after the demonstrations was surveyed in 67 of these, with an additional 37 schools which were not represented checked as a control. The records obtained from these schools indicated that there was a net increase of 38 percent in the number of times that fish was used per month, and a 29 percent net rise in the average amount used. These, and additional statistics on the results of the survey, are shown in table 4. The increases achieved in Vermont came almost entirely from the greater use of fresh and frozen fish. In view of the former reluctance of most Vermont schools to use fish in these forms, State officials reported that these increases were a surprising accomplishment of the demonstrations. The demonstrations in Vermont were presented in: Bellows Falls, Montpelier, Wilmington, Rutland, South Burlington, White River Junction, Bradford, Enosburg Falls, Eden, St. Albans, and Lyndon Center.

Table 4 - Results of Vermont School-Lunch Program Fish-Cookery Demonstrations

Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
For Schools:						
Represented	1.2	1.9	+58	33.6	49.7	+48
Not Represented	1.0	1.2	+20	29.6	35.2	+19
Net Gain for Represented Schools			+38			+29

NEW HAMPSHIRE: Demonstrations in New Hampshire were presented in 1951 in five towns: West Swanzey, West Springfield, Greenland, Rochester, and Monroe. Representatives from 90 schools attended these meetings. The survey, made as in the other states, covered 52 schools which were represented and 20 which were not. Findings indicated that the demonstrations resulted in a net gain of 54 percent in the times fish was served per month. On a poundage basis, the net increase for

Table 5 - Results of New Hampshire School-Lunch Program Fish-Cookery Demonstrations

Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage	Demonstration		Percentage
	Before	After	Change	Before	After	Change
	No.	No.	%	Lbs.	Lbs.	%
For Schools:						
Represented	1.6	2.9	+81	31.8	53.0	+70
Not Represented	1.5	1.9	+27	30.4	39.1	+29
Net Gain for Represented Schools			+54			+41

the State amounted to 41 percent. Table 5 shows a summary of the results of the demonstrations in New Hampshire.

In addition to the five school-lunch demonstrations given in New Hampshire, a demonstration for institutional cooks and dieticians was presented at the State school in Laconia. This meeting was attended by 94 persons from institutions throughout the State of New Hampshire.

CONCLUSION

The increase in the use of fish in the New England schools is a good indication of the effectiveness of the fish-cookery demonstrations. However, this immediate increase in fish consumption should not be considered as the only benefit of the program.

By learning more about the nutritional value of the foods they serve, along with points on its purchase, care, and handling, the managers can give their children better meals. This is reflected in the health of the younger generation.

The eating habits learned by the children at school are also communicated to their homes. By creating greater acceptance of fish in the schools, the demonstrations can help increase its use in the community as a whole. Thus, the fish-ing industry, the children, and their parents all benefit from this program.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, JANUARY 1953, P. 33; APRIL 1951, PP. 32-6; SEPTEMBER 1950, PP. 23-6; JULY 1950, P. 17; APRIL 1950, PP. 49-51.



HERRING BLOCK GENERATING PLANT'S WATER INTAKE TUNNELS

Millions of small herring blocked the intake tunnels of a lighting company's generating plant at Glenwood Landing, Long Island, for a week early in December 1952. The fish threatened to cut off the flow of water used to cool the plant's mammoth condensers, according to The New York Times. A blackout, suggested by a biologist of the New York State Bureau of Marine Fisheries, solved the problem and ended this unusual herring run.

The herring had become enmeshed in such great numbers in the special filter condenser screens protecting four 14-square-foot intake tunnels that extra crews on a 24-hour vigil barely managed to keep the screens open enough to avoid a shutdown of the generators. Prior to the blackout, approximately two tons of fish were raked off the strainers each day.

Herring have never been known to frequent Long Island waters in sufficient numbers to be fished commercially. The State biologist expressed amazement at the presence of such great numbers. He believed that this run probably was due to an unusually favorable spawning season the previous year. He said further that the feeding habits of the herring probably were causing them to concentrate at the plant. Herring eat minute plankton organisms in the water and the company's outside lights, enough to light a small city, attracted the plankton organisms.

LOUISIANA SCHOOL-LUNCH PROGRAM USES MORE FISH

William I. Cabaniss*

BACKGROUND

Fishery products were used 48 percent more frequently by the school lunchrooms in Louisiana following an extensive program of fish-cookery demonstrations conducted by the U. S. Fish and Wildlife Service during the 1951/52 school year. This was one finding of a survey made by the Service to learn the value of its market development work with the schools of that State. These demonstrations were a part of the Service's efforts to stimulate the use of more fish in the National School Lunch Program. Similar work during the 1951/52 school year was carried on in New York, Pennsylvania, Florida, and other states.

The 52 demonstrations given in Louisiana (fig. 1) had an effect on the daily eating habits of over 260,000 elementary and high-school students. More than 2,500 lunchroom cooks and managers, representing 930 schools, attended the meetings. These schools have an aggregate enrollment of approximately 336,000 children. The program was planned so that an equal number of demonstrations could be held for colored and white school-lunch personnel. All of the meetings were conducted in cooperation with the Louisiana Department of Education's School Lunch Section and the U. S. Department of Agriculture's Production and Marketing Administration.

NATURE OF THE DEMONSTRATIONS

At each of these demonstrations a trained Home Economist of the U. S. Fish and Wildlife Service prepared six different fish recipes using canned and frozen fish. She also discussed

the purchasing, handling, and nutritive value of fishery products. Information on the local price ranges and availability of fish, obtained prior to the demonstrations through contacts with fish dealers and frozen food distributors in each area, was given by a Service Fishery Marketing Specialist. A number of dealers and distributors came to the meetings and were available to informally answer specific questions regarding their operations. Fish recipes prepared especially for the school-lunch program were distributed to all who attended.



FIGURE 2 - SCHOOL LUNCHROOM PERSONNEL LEARNING ABOUT FISH COOKERY FROM U. S. FISH AND WILDLIFE SERVICE DEMONSTRATOR.

* FISHERY MARKETING SPECIALIST, EDUCATIONAL AND MARKET DEVELOPMENT SECTION, BRANCH OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE.

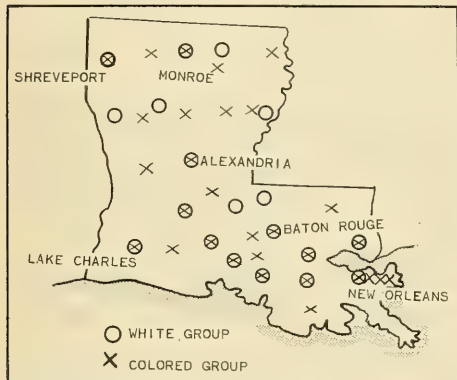


FIGURE 1 - RELATIVE LOCATIONS OF 52 DEMONSTRATIONS GIVEN IN LOUISIANA.

METHOD OF DETERMINING THE VALUE OF THE DEMONSTRATIONS

The value of this program was determined by a post-demonstration survey covering 230 representative schools that attended the meetings. By examining menus, purchase invoices, and interviewing lunchroom personnel, it was possible to learn the number of times that fish was served per month before and after the demonstrations. February 1952 was selected as the check month for the northern and central Louisiana areas where demonstrations were given during the fall of 1951. April 15-May 15 was chosen as the period for checking the use of fish in the schools of southern Louisiana where demonstrations were given earlier in 1952. For both groups the use of fish for the same periods in 1951 were used for comparison.

A random sample of 100 schools not represented at any of the demonstrations was selected for use as a control. The records of these schools were examined in the same manner and for the same periods as those of the schools represented at demonstrations.

SURVEY FINDINGS

The average number of times per month that fish was served by schools represented at the demonstrations increased 48 percent. The average number of pounds of fish used per month by these schools increased 41 percent (table 1).

Table 1 - Results of Louisiana School-Lunch Fish-Cookery Demonstrations						
Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage Change	Demonstration		Percentage Change
	Before	After		Before	After	
For Schools:	No.	No.	%	Lbs.	Lbs.	%
Represented	1.9	2.8	+48	95.0	134.0	+41
Not represented	1.5	1.6	+ 8	59.5	61.3	+ 3
Net Gain for Represented Schools			+40			+38

The 100 schools not represented at the demonstrations showed only a slight increase in the number of times per month that fish was served or in the amount of fish used per month. The main factor responsible for this slight increase was found to be the listing of frozen fish fillets in the U. S. Department of Agriculture's monthly bulletin on abundant foods which is sent out to all schools.

The survey also revealed that schools in the northern part of the State had a much larger percentage increase in the use of fishery products than the schools of southern Louisiana (table 2).

Table 2 - Results of Louisiana School-Lunch Fish-Cookery Demonstrations by Area						
Item	Times Fish Were Used Per Month Per School			Average Amount of Fish Used Per Month Per School		
	Demonstration		Percentage Change	Demonstration		Percentage Change
	Before	After		Before	After	
For Schools In:	No.	No.	%	Lbs.	Lbs.	%
Northern Louisiana	1.6	2.6	+63	64	109	+70
Southern Louisiana	2.0	2.8	+40	103	146	+42

NOTE: THE CENTRAL PARISHES OF PAIDES, VERNON, AND ALLEN WERE OMITTED IN ARRIVING AT THE FIGURES SHOWN IN THIS TABLE. THIS WAS DONE TO OBTAIN A BETTER COMPARISON BETWEEN THE NORTHERN AND SOUTHERN SECTIONS OF THE STATE.

Prior to the demonstrations considerably less fish had been used by northern Louisiana schools. This can be partially attributed to differences in the religious customs of the two geographic areas of the State. The people in the southern

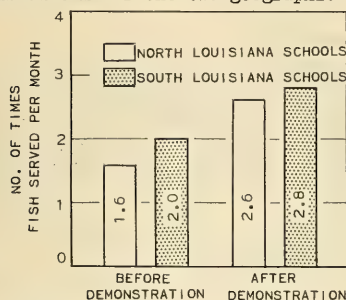


FIGURE 3 - COMPARISON IN USE OF FISH BY NORTH AND SOUTH LOUISIANA SCHOOLS BEFORE AND AFTER DEMONSTRATIONS.

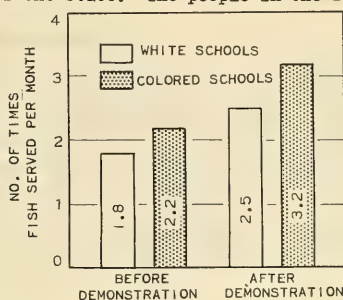


FIGURE 4 - COMPARISON IN USE OF FISH BY WHITE AND COLORED LOUISIANA SCHOOLS BEFORE AND AFTER DEMONSTRATIONS.

part of the State are mainly Catholics of French descent who have always felt a greater compulsion to eat fish than the people in northern Louisiana who are mostly Protestants of English and Irish descent. The proximity of the southern part of the State to the coast, where fresh fish are readily available, undoubtedly also accounts for part of the differences in the food habits of these two areas. After the demonstrations there was much less difference in the use of fish by the schools in the two areas (see fig. 3).

A comparison of the use of fish in colored and white schools is shown graphically in figure 4. Colored schools were serving fish 22 percent more frequently than the white schools before the demonstrations and 28 percent more often afterwards. Though the colored schools used fish more frequently, the average amount of fish used by them was less because the average colored school serves fewer hot lunches.

The increase in the amount of fish used by the Louisiana schools represented at demonstrations totaled to approximately 40,000 pounds of fish per month. At an average cost of 35 cents per pound, this represents additional fish purchases amounting to \$14,000 per month, or \$126,000 in the regular school year of nine months. The benefits of this increased buying was found to be widely spread among many dealers, with most dealers reporting some increases in their school business. One of the largest increases was reported by a Baton Rouge frozen-food distributor who said his fish sales increased from slightly over 5,000 pounds during the 1950/51 school year to over 50,000 pounds during the 1951/52 school year. This sizable increase was due to the firm's activity in following up the demonstrations with promotion of its own.

Personal interviews with the cooks and managers revealed that their greater knowledge of frozen fish had been a major factor in the increased use of fish which resulted. Though many had known very little about frozen fillets prior to the demonstrations, they had since made extensive use of the recipes demonstrated, especially the one for oven-fried fillets. However, the age-old superstition regarding the supposedly harmful effects of combining fish and milk was found to deter fish use in some areas even after the demonstrations. Principals and lunchroom managers complained that parents of many of the school children would not allow their children to eat fish and milk together. Generally, this problem was found only in the more rural areas of the State. Another problem in some rural areas concerned the difficulty which small schools had in obtaining frozen fish. In some cases of this kind,

the Service's Fishery Marketing Specialist was able to work out a solution to the problem, but the solution of future problems of this nature are a challenge to the fish dealers.

OTHER EDUCATIONAL ACTIVITIES

In addition to the program of fish-cookery demonstrations, the general public, through the cooperation of local newspapers and radio stations, was encouraged to use fish. Many newspapers incorporated fish recipes and purchasing hints into stories they ran on the local demonstrations. Guest appearances on a number of local radio stations were made by the Service's Home Economist and Fishery Marketing Specialist. The results of these activities directed at homemakers could not be evaluated in the same manner as the demonstrations. However, comments from grocery-store managers handling fish indicated that considerable interest in fish had been stimulated among their customers through this publicity.

CONCLUSIONS

The result of the surveys conducted in Louisiana following this program of fish-cookery demonstrations points out the educational value of actual demonstration techniques used in the preparation of fish. Lunchroom managers attending these demonstrations increased their use of fish by becoming better informed. Inland areas represent the greatest potential of untapped markets for fishery products. Through educational and sales efforts by fish dealers, fish consumption can be increased.



GULF FISHERIES, 1950

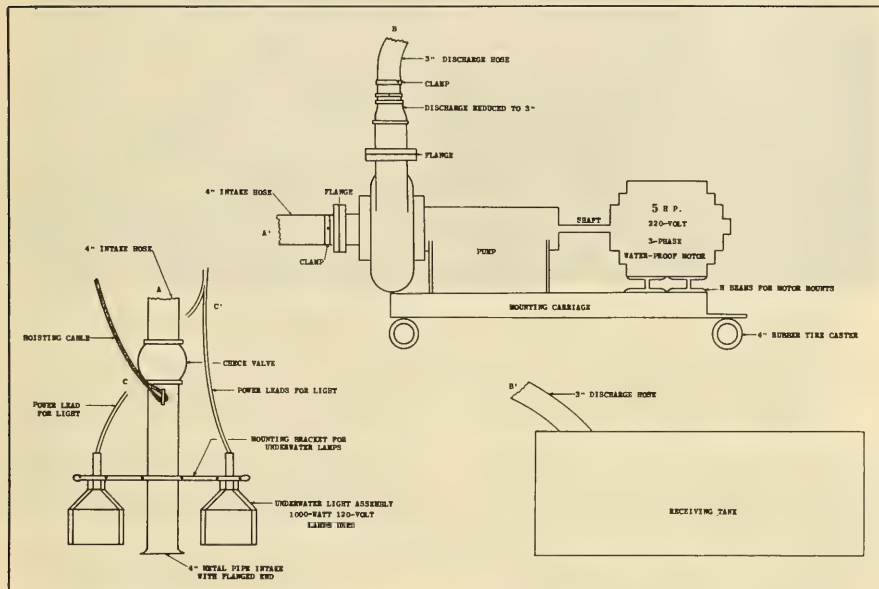
DO YOU KNOW THAT:

The 1950 United States catch of fish and shellfish in the Gulf of Mexico area amounted to 570,541,000 pounds, with an ex-vessel value of \$50,358,000--an increase of 7 percent in volume and 1 percent in value as compared with the landings of 1949. Menhaden (326,030,000 pounds) comprised 57 percent of the total landings; shrimp (151,753,000 pounds) accounted for 27 percent.

A total of 23,767 fishermen operated in the Gulf area during 1950, compared with 22,861 in 1949. The number of fishing vessels of 5 net tons and over rose to a new high of 2,704; in 1949 there were 2,244 craft operating.

--C.F.S. No. 817

By J. G. Ellson*



*CHIEF, NORTH PACIFIC FISHERIES EXPLORATION AND GEAR RESEARCH, BRANCH OF COMMERCIAL FISHERIES,
U. S. FISH AND WILDLIFE SERVICE, SEATTLE, WASHINGTON.

A total of eight tests were made between September 9 and October 2, all during the hours of darkness. Two 1-hour and two 10-hour tests were made off Cape Lookout, Oregon; two 10-hour tests were made in Newport Bay, Oregon; and two 10-hour tests were made in Neah Bay, Washington. Except for the two 1-hour tests,



FIGURE 2 - VIEW OF PUMP AND MOTOR ASSEMBLY IN OPERATION ON BOARD THE JOHN M. COBB.

- A - ELECTRIC MOTOR, 5 HP., 1,800 RPM., 3 PHASE, 60 CYCLE, 220 VOLTS.
- B - PUMP, BLADELESS IMPELLER TYPE, 4-INCH INTAKE AND OUTLET DIAMETER.
- C - MOUNTING CARRIAGE ON RUBBER TIRE CASTERS, SECURED WITH ROPE AS SHOWN.
- D - INTAKE HOSE, 20 FEET LONG, 4-INCH INSIDE DIAMETER SUCTION HOSE.
- E - PIPE REDUCER, TO REDUCE DIAMETER FROM 4 INCHES TO 3 INCHES (TO PREVENT CAVITATION).
- F - DISCHARGE HOSE, 30 FEET LONG, 3-INCH INSIDE DIAMETER SUCTION HOSE.

all trials were for 10-hour periods between 8:00 p.m. and 6:00 a.m. All trials, except a single 1-hour test, resulted in the taking of fish. Catches consisted of individuals from 1 inch to 9 inches in length (see figure 5). The numbers of individual fish taken in the tests were as follows: 0, 61, 12, 23, 5, ¹/₁₁, 1,000 (estimated), 226. The catches were composed mostly of small smelt (1 to 2 inches in length) and herring (4½ to 9 inches in length), and only small numbers of other varieties were taken. Usually when fish were caught, there were good indications of small fish in the area.

Several small herring (approximately 4½ to 6 inches) reached the receiving tank in a living state. These fish were quite active and appeared to have been 1/INCLUDES THREE SMALL SQUID.



FIGURE 3 - VIEW OF INTAKE PIPE AND UNDERWATER LIGHT ASSEMBLY.

- A - PIPE, GALVANIZED IRON, 18 INCHES LONG, 4 INCHES INSIDE DIAMETER, WITH 1-INCH FLANGE WELDED ON.
- B - CHECK VALVE.
- C - HOUSING FOR UNDERWATER LIGHT, MADE OF TWO SECTIONS OF 20-GAUGE STAINLESS STEEL FASTENED TOGETHER WITH SCREWS AND NUTS AS SHOWN, AND MOUNTED TO PIPE BY A STEEL BRACKET MADE OF $\frac{1}{2}$ -INCH STRAP STEEL. CONTAINS UNDERWATER 1,000-W. SEALED-BEAM LIGHT.
- D - BOLT AND NUT ARRANGEMENT TO PERMIT ADJUSTMENT OF LIGHT DIRECTION.
- E - HOISTING CABLE, FOR HOISTING AND LOWERING THE LIGHT ASSEMBLY FROM THE BOOM WHICH IS SWUNG OUTBOARD.



FIGURE 5 - DIFFERENT KINDS OF FISH CAUGHT BY THE PUMP.

- A - *CYMATOGASTER AGGREGATUS* (SHINER).
- B - *HYPOMESUS PRETIOSUS* (SILVER SMELT).
- C - *ALLOSMERUS ATTENUATUS* (WHITEBAIT).
- D - *ENGRAULIS MORDAX* (ANCHOVY).
- E - *MICROGADUS PROXIMUS* (TOMCOD).
- F - *LOLIGO OPALSCENS* (SQUID).
- G - *CLUPEA PALLASII* (HERRING).



FIGURE 4 - A FISH BOX 48 INCHES LONG BY 24 INCHES WIDE BY 12 INCHES HIGH WAS USED AS A RECEIVING TANK. BUNT WEBBING, $\frac{3}{8}$ -INCH MESH, STRETCHED MEASURE, WAS USED TO PREVENT WASHING AWAY OF THE SMALL FISH. THIS IMPROVISED ARRANGEMENT WAS USED, SINCE THE JOHN N. COBB WAS PRIMARILY ENGAGED IN OCEAN TRAWLING MAKING IT UNFEASIBLE TO CARRY A MORE SUITABLE TANK DURING THIS CRUISE. THE TURBULENCE AND WATER PRESSURE ACCOUNTED FOR THE CONSIDERABLE DAMAGE TO THE FISH.

little affected by going through the pump. However, the majority of fish were dead, apparently having been injured by the pumping process or by the force of the water in the receiving tank. Fish that were examined showed injuries in the region of the head. A number of the 1-inch to 2-inch smelt were seen alive, but it was difficult to determine their condition, and these fish may have died within a short period. The improvised receiving tank (described in figure 4), the force and turbulence of the discharge water, and the absence of deck lights during experimental periods made close observation difficult.

Further tests are planned, using an improved larger receiving tank, to ascertain the ability of these fish to survive the pumping process. If results warrant, additional experiments will be carried out with a larger size pump and several types of fish attractors, such as rheostat-controlled lights of varying intensity and electrical fields.





Progress on Projects, January 1953

ANALYSIS AND COMPOSITION: Composition and Cold-Storage Life of Fresh-Water Fish: Proximate composition of 16 carp and 6 lake trout was determined. Results are presented in the following tables:

Composition of Edible Portion of Carp

Species	Sample No.	Length Centimeters	Weight of Whole Round Fish	Fillet Yield from Whole Round Fish	Proximate Composition of Edible Portion			
			Grams	Percent	Moisture Percent	Fat Percent	Protein Percent	Ash Percent
Carp (<i>Cyprinus carpio</i>) ^{1/}	1	28.0	350	28.6	83.3	1.28	15.6	0.81
	2	29.5	375	29.3	82.7	4.55	16.8	0.94
	3	31.5	465	27.0	80.8	1.78	17.8	1.00
	4	32.0	495	31.7	79.0	2.10	18.4	1.06
	5	25.5	265	29.4	80.7	1.03	18.1	1.02
	6	31.5	475	31.6	80.2	1.41	18.6	1.00
	7	50.5	2,080	27.0	71.1	12.50	16.9	0.96
	8	53.5	2,020	31.0	74.0	8.60	17.8	1.01
	9	54.5	1,970	29.0	74.7	8.60	17.1	1.00
	10	51.0	1,725	30.0	79.1	3.45	17.8	1.14
	11	50.5	1,825	25.0	74.6	9.53	17.4	1.27
	12	52.0	2,040	29.0	74.4	10.29	17.4	1.09
	13	50.0	1,625	26.0	72.6	9.68	17.0	0.99
	14	53.0	1,900	30.0	72.9	10.66	16.3	1.11
	15	52.0	1,965	25.0	75.7	7.11	18.1	1.17
	16	53.0	1,995	32.0	75.6	7.84	17.5	1.03

^{1/} CAUGHT IN LAKE BENTON, MINNESOTA, IN AUGUST 1952.

Composition of Edible Portion of Lake Trout

Species	Sample No.	Length Centimeters	Weight of Drawn (eviscerated Fish)	Fillet Yield from Drawn (eviscerated) Fish	Proximate Composition of Edible Portion			
			Grams	Percent	Moisture Percent	Fat Percent	Protein Percent	Ash Percent
Lake Trout (<i>Oncorhynchus nasarcus</i>) ^{1/}	1	94	6,804	61	67.6	13.97	15.8	1.01
	2	84	5,670	57	65.1	16.20	19.1	1.08
	3	77	3,855	55	68.4	13.90	18.8	1.05
	4	72	2,500	55	76.1	6.47	16.0	1.06
	5	70	3,035	64	64.3	19.38	17.1	1.08
	6	72	2,515	62	70.2	11.22	19.4	1.10

^{1/} CAUGHT IN LAKE SUPERIOR NEAR ISLE ROYALE IN JUNE 1952.

(Seattle)

* * * * *

REFRIGERATION: Freezing Fish at Sea, Defrosting, Filleting, and Refreezing the Fillets: VESSEL OPERATION: Inclination tests were carried out on the research trawler Delaware by representatives of a commercial boat-building concern to determine the vessel's stability under various load conditions. Results of the tests indicated that the addition of the proposed modified brine-freezing equipment will not materially affect the stability of the vessel.

LABORATORY: Effects of brine concentration on haddock and scrod haddock fillets during the brine-dipping process are being studied. Tap water and six brine solutions (with concentrations of: 0.8, 5.0, 10.0, 15.0, 20.0, and 26.0 percent sodium chloride by weight) have been used. Sixty pounds each of scrod haddock fillets (separated into seven 8.5-pound groups) and haddock fillets (separated into seven 8.5-pound groups) were used. Under controlled conditions, each group of scrod and haddock fillets was immersed in one of the brines. Immersion was for exactly 20 seconds in all cases. Each group was allowed to drain on a screen for two minutes, weighed, wrapped in moisture-vaporproof cellophane, boxed, and frozen in a plate freezer (-50° F. on the plates).

After several weeks in frozen storage determinations for salt, free drip, press drip, total solids in press drip, and toughness will be made on representative samples from each group. The effect of salt absorption upon the palatability of the fillets will also be studied. Preferences of the taste panel for the cooked samples will be scored to give information as to the individual taste threshold for salt, and to determine the relative saltiness of the various samples.
(Boston)



SOURCES OF INFORMATION CONCERNING THE COMMERCIAL FISHERIES

Fishery Leaflet 362, Sources of Information Concerning the Commercial Fisheries, was recently issued. Various publications from which information on commercial fisheries (especially of the United States) may be obtained are listed in this 23-page leaflet. It is not meant to be a complete bibliography; therefore, only principal contributions or bibliographies are listed. References are listed under the following major categories--byproducts, canning, freezing, gear, marketing, statistics, consumption, cookery, directories, employment, salting, sanitation, smoking, spoilage, technical journals, trade journals, and visual aids. Basic sources are indicated.

For free copies of this leaflet write directly to the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

TECHNICAL NOTE NO. 24--A PORTABLE IMMERSION FREEZER

REQUIREMENTS

Evaluation of the commercial feasibility of freezing "round" fish at sea for subsequent thawing and processing into frozen fillets ashore is one of the projects for the Boston Laboratory of the U. S. Fish and Wildlife Service. The fish are being frozen by immersion in a cold (5° to 10° F.) sodium-chloride brine onboard the research trawler *Delaware* (Magnusson, Pottinger, and Hartshorne 1952). Representative samples of the fish frozen at sea are analyzed in the laboratory to determine extent of salt penetration into the fish.

Tests at the laboratory have shown that salt penetration into fish by the freezing medium has been proven of minor concern. However, to formulate methods of freezing which would further minimize penetration, knowledge of the factors which govern penetration is necessary. The strict control of immersion time, brine temperature, and brine concentration necessary for such studies is not practicable in the large freezer on board the vessel. Furthermore, small scale studies on the suitability of immersion-freezing media other than sodium-chloride brines would seriously interfere with the scheduled operation of the larger freezer aboard the vessel. For these reasons, a portable immersion freezer, having a relatively wide temperature range and affording accurate control at a given temperature, was constructed.

The freezing apparatus, built somewhat along the lines of a laboratory constant temperature bath (Tappel 1951), was designed to fill the following requirements:

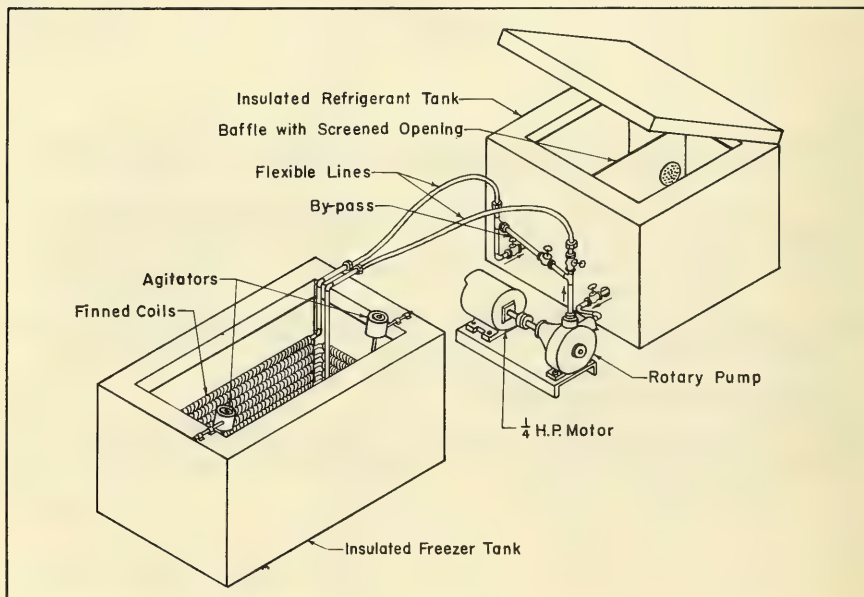


FIGURE 1 - DIAGRAM OF THE PORTABLE IMMERSION FREEZER.

1. Allow rigid control of immersion time of the fish and brine temperature during the freezing process.
2. Facilitate easy and rapid changes in concentration or composition of the freezing medium.
3. Be easy to transfer from laboratory to vessel and be capable of operation at either location.
4. Have sufficient capacity to lower the temperature of the freezing medium to -40°F . and to maintain the temperature to within $\pm 1^{\circ}\text{F}$. when 4 or 5 haddock (approximately 12 pounds) are immersed in the medium.
5. Have a relatively low initial cost.
6. Have a low electric power demand, since power available on the vessel is limited.
7. Be easy to dismantle for cleaning.

A survey of available literature on low-temperature baths had revealed that the use of mixtures of solidified carbon dioxide (dry ice) and alcohol afford an efficient means of attaining and holding the desired temperatures. The vaporization of the pieces of dry ice is accomplished by extraction of heat from the alcohol. By use of sufficient quantities of dry ice, the temperature of the alcohol may be reduced to values approaching that of the sublimation temperature of carbon dioxide (-109°F .). Chilled in this manner, alcohol serves as an excellent cooling medium.

DESCRIPTION OF APPARATUS

The apparatus consists essentially of two insulated tanks (fig. 1). One, the refrigerant tank, contains the alcohol dry-ice mixture. The other, the freezing tank, contains the immersion-freezing medium and a coil of finned tubing. A rotary positive displacement pump, powered by a $\frac{1}{2}$ -hp. motor, circulates the chilled alcohol from the refrigerant tank through the coils in the freezing tank by means of a piping system suitably equipped with valves and flexible connections. Two laboratory stirrers are mounted on the freezing tank to agitate the freezing medium. The tanks, fabricated from stainless steel, fit snugly into plywood casings which are insulated with four inches of glass wool. The refrigerant-tank casing is equipped with an insulated hinged cover.

The refrigerant tank, 18 inches square by 16 inches deep, is divided into halves by a vertical removable baffle which is fitted with a screened opening. The inlet for warmed alcohol from the freezing tank is on one side of the baffle and the outlet for chilled alcohol on the other. Since the dry ice is added only on the inlet side, the baffle insures adequate contact of the warmed alcohol and the cold dry ice. Also, the baffle screen prevents passage of the dry ice to the outlet side and thence through the coil system. The inlet and outlet fittings on the refrigerant tank can be removed to facilitate dismantling of the tank for transportation and cleaning.

The freezing tank coil, fabricated from $\frac{3}{4}$ -inch finned copper tubing and having a total heat exchange area of 60 square feet, clears the sides of the 30 x 14 x 14-inch freezing tank by $\frac{1}{2}$ -inch on all sides. The coil, a self-supporting unit, can be easily removed from the tank.

The circulating pump is rated at 8 gallons per minute against a 20-foot head. It is powered by either an a. c. or a d. c. 110-volt motor. The d. c. motor is used when the freezer is operated on board the vessel. A flexible coupling on the drive shaft affords easy interchangeability of the motors. Unions in the $\frac{3}{4}$ -inch piping system permit the tanks, coil, and pump to be disconnected for ease in handling. The 3-foot flexible pipe connections between the tanks provide freedom in positioning the various parts of the apparatus to conform to the restricted space available on board fishing vessels.

Piping and valves are connected in such a manner as to allow optional bypassing of the coil in the freezing tank. This provides flexibility in controlling the flow of alcohol and eliminates the necessity of stopping the positive displacement pump when no flow is required. The chilled alcohol is circulated through the bypass during periods of "no demand" in the coils. Such a system insures that the pump and its intake pipe will be kept sufficiently cold to prevent "flashing" of the dissolved gaseous carbon dioxide and consequent failure of the pump due to "vapor lock."

The temperature of the freezing medium is controlled by regulating the flow of chilled alcohol through the coils. Whereas hand valves, requiring considerable attention for proper temperature regulation, are used on the present apparatus, the system would lend itself well to automatic thermal control devices.

During the initial tests, an average cooling rate of 220 B. t. u./minute (1.1 standard refrigeration tons) was produced in the freezing medium. With the media used to date, an over-all coefficient of heat transfer of 10 B. t. u./hr./ft.²/degree F. was indicated for the 60 square-foot surface area of the freezing tank coil. Temperatures of the medium, upon placing four haddock (average weight of three pounds each) in the freezing tank, were maintained to within $\pm 1^{\circ}$ F. of the desired temperatures.

This portable immersion freezer has been used in the laboratory and on board the trawler Delaware during two cruises. It has thus far been wholly satisfactory in performance.

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John A. Holston, Chemist, and
S. R. Pottinger, Fishery Products Technologist,
Fishery Technological Laboratory,
Branch of Commercial Fisheries,
U. S. Fish and Wildlife Service,
Boston, Massachusetts.



TRENDS AND DEVELOPMENTS

Anglers' Fishing-License Sales Reach New High

The popularity of fresh-water fishing in the United States reached a new high during the year ended June 30, 1952, with the record sale of 17,127,896 anglers' licenses, the Secretary of the Interior was advised by the Director of the Fish and Wildlife Service on February 3, 1953. The gross

FISHING LICENSES SOLD IN THE UNITED STATES -- July 1, 1951, to June 30, 1952

STATE	RESIDENT	NON-RESIDENT	TOTAL	PERCENT FEE!
Alabama	168,569	13,079	181,648	5,256,839
Arizona	67,817	17,503	85,320	255,191
Arkansas	257,759	90,308	348,067	830,137
California	1,047,739	11,608	1,059,347	2,217,094
Colorado	273,249	71,653	344,902	1,090,399
Connecticut	89,375	6,463	95,838	326,424
Delaware	6,824	1,760	8,584	21,480
Florida	191,215	49,709	240,924	776,244
Georgia	348,316	4,115	352,431	233,621
Idaho	168,576	12,309	180,885	577,516
Illinois	725,154	39,814	764,968	794,706
Indiana	551,928	36,353	588,281	840,092
Iowa	350,071	12,518	362,589	611,133
Kansas	285,892	6,793	292,685	560,169
Kentucky	391,060	76,523	467,583	412,447
Louisiana	76,516	12,821	89,337	121,595
Maine	123,226	6,436	129,662	636,050
Maryland	86,613	6,738	93,351	161,261
Massachusetts	207,779	12,821	220,600	563,275
Michigan	841,913	282,425	1,124,338	2,153,445
Minnesota	644,046	286,510	930,556	2,062,855
Mississippi	113,122	59,110	172,232	246,613
Missouri	613,123	41,965	655,088	1,114,888
Montana	176,238	29,592	205,830	272,122
Nebraska	195,267	8,294	203,561	309,664
Nevada	21,627	21,459	43,086	167,291
New Hampshire	93,873	49,305	143,178	396,661
New Jersey	133,956	11,768	145,724	483,460
New Mexico	65,059	10,512	75,571	205,171
New York	798,651	35,785	834,436	1,783,149
North Carolina	277,564	45,676	323,240	531,174
North Dakota	40,487	707	41,194	36,464
Ohio	834,463	49,447	883,910	1,278,137
Oklahoma	378,290	53,099	431,389	607,235
Oregon	295,423	2,346	297,769	1,162,400
Pennsylvania	642,691	21,595	664,286	422,194
Rhode Island	23,140	2,946	26,086	361,021
South Carolina	275,582	3,688	279,270	312,561
South Dakota	110,600	23,870	134,470	278,166
Tennessee	537,821	224,230	762,055	656,163
Texas	184,087	7,525	191,612	208,328
Utah	110,341	6,760	117,101	246,143
Vermont	71,760	30,516	102,276	336,080
Virginia	332,971	36,054	369,025	1,019,736
Washington	423,560	20,383	443,943	484,194
West Virginia	276,990	16,678	293,668	1,019,736
Wisconsin	738,944	299,768	1,038,712	2,067,492
Wyoming	199,972	49,650	249,622	537,552
TOTALS	14,819,671	2,308,225	17,127,896	\$37,609,539

FIGURES INCLUDE GROSS COST OF LICENSES, SPECIAL PERMITS, DEER, AND ONE-HALF THE COST OF COMBINATION LICENSES. COMBINATION LICENSES HAVE BEEN INCLUDED IN BOTH HUNTING AND FISHING FIGURES.



revenue derived by the 48 States from these license sales amounted to \$33,609,539.

Compared with the previous year when 16,026,699 anglers' fishing licenses were sold by the various States for \$35,554,285, the 1951/52 season totals show an increase of 1,101,197 licenses and a decrease of \$1,944,746.

Nonresident fishermen purchased 2,308,225 licenses in fiscal year 1952, an increase of 152,804 over the 2,155,421 of the previous year. States which attracted the greatest number of out-of-State anglers were Wisconsin (299,768 nonresident license sales), Minnesota (286,510), Michigan (282,425), and Tennessee (224,230).

In the number of licenses issued, Michigan with 1,124,338 continued to head the list. California rated second place with 1,059,367, while third place went to Wisconsin with 1,038,712. Minnesota held fourth place with 930,556; Ohio was fifth with 874,910; New York was sixth with 794,436; Tennessee, seventh with 762,055; Illinois, eighth with 750,968; Pennsylvania, ninth with 664,286; and Missouri, tenth with 654,268.

In Alaska the sale of 43,495 fishing licenses brought \$74,938. Resident licenses numbered 29,826; nonresident, 13,669. One-half of the revenue from hunting and fishing license sales in Alaska is required by law to go into "miscellaneous receipts" of the United States Treasury, and the remainder goes into the Territorial school fund.

In the Territory of Hawaii, according to the Board of Commissioners of Agriculture and Forestry, only 627 fresh-water game-fishing licenses were purchased at a cost of \$1,517. Fishing licenses in Hawaii, however, are required for the taking of introduced fresh-water game species only. As the bulk of their sport fishermen fish in salt water, the number of licenses sold gives a most incorrect measurement of the degree of sport-fishing activity in the Territory.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, MARCH 1952, P. 28; APRIL 1951, P. 30.



Bids Received for Lease of Fish Cannery in American Samoa

Two bids were received on the proposal for the lease of the fish cannery at Tutuila, American Samoa, according to officials of the Pacific Branch of the Department of Interior's Office of Territories. Although neither of the bids was completely in accord with specifications, it is hoped that some satisfactory arrangement can be worked out with one or the other of the bidders by direct negotiation.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1952, PP. 46-8.



California Sardine 1952/53 Season Worst in History

The 1952/53 California sardine (pilchard) season (that ended February 1) produced a total of only 3,320 tons, and was the worst season in the 37 years that the State has kept records, reports the California Department of Fish and Game in a recent bulletin. The total landings for the season only equalled "one fair--not outstanding--day's landings during past seasons," according to the Department. Commercial sardine fishermen landed more than 700,000 tons in 1936/37 (the record season). As the season ended on February 1 the fleet was fishing for anchovies as a substitute for sardines.

The present catastrophe, predicted by Department biologists more than a decade ago, underscores the Department's plea for strict regulation and management of the fishery until it can recover. The Departmental recommendation asks that the California Fish and Game Commission be given the necessary regulatory power by the State Legislature. Meanwhile, the Sardine Industry Advisory Committee has urged the Legislature that future sardine fishing laws be set by the State's Marine Research Committee.

The Pacific mackerel fishery in California is also at a low ebb. Low spawn survival of Pacific mackerel plus overfishing "has reduced this fishery to the same status as the sardine--meaning that for commercial purposes neither fishery exists at present," stated the supervisor of the State Marine Fisheries Laboratory. The Pacific mackerel fishermen are fishing for the less-popular jack mackerel due to the scarcity of Pacific mackerel.



Chesapeake Bay Oyster Photography Project Abandoned by Maryland

The project of learning more about oysters through underwater photography has been abandoned by the Maryland Tidewater Fisheries Commission, according to the January Maryland Tidewater News issued by the Department of Research and Education. "There is nothing yet to take the place of the dredge," said a member of the Commission. "The camera has some value in determining the relative productivity of any bar, but this preliminary work indicates that it is only of real value when used with the older tong-and-dredge sampling methods," a Commission statement said.

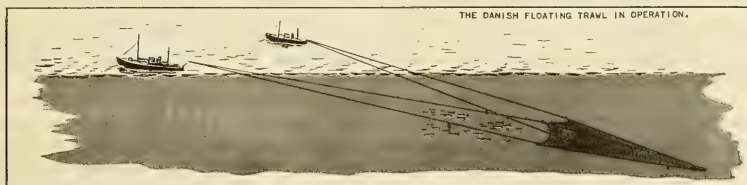
The camera, rigged with a special filter to offset cloudy water, was tested for four days in October 1952. It was estimated at the time it would cost from \$3,000 to \$4,000 a month to operate in late fall when the Chesapeake Bay waters are clearest.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, JANUARY 1953, P. 31.



Danish Floating Trawl Tested Off Block Island

Experiments with a Danish floating trawl were carried out in the Block Island Sound winter herring fishery during January by specialists of the U. S. Fish and Wildlife Service's Exploratory Fishing and Gear Development Section and fishermen



of the Point Judith Fishermen's Cooperative Association. Unfortunately, these tests had to be temporarily suspended in late January due to an unusual scarcity of herring which in past years have been present in Block Island Sound in large numbers. Only scattered fish have appeared thus far this season and the total catch by the commercial otter-trawl fleet has been very small. The experiments were to be continued immediately when the schools of herring show up again in greater concentrations.

Although no herring schools were found for testing the floating trawl, results of the experiments were satisfactory from an operational standpoint. Several blind sets were made, and on each occasion the operation proceeded smoothly. The two vessels, furnished by the Point Judith Fishermen's Cooperative Association, were local draggers 48 feet and 57 feet in length, with 110- and 100-hp. Diesel engines, respectively. On one set, an accompanying vessel made echo recordings of the trawl, which showed the float line 5 fathoms below the surface and the lead line 10 fathoms below the surface, thus giving a vertical opening of 5 fathoms. This was a 36-foot trawl (3/4 normal size) towed at $2\frac{1}{2}$ to 3 knots in 19 fathoms of water with 50 fathoms of towing cable.

Point Judith fishermen who took part in the trials quickly learned the method of setting and hauling the floating trawl. They were optimistic concerning its possibilities.

Federal Purchases of Fishery Products

FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, DECEMBER 1952:

For the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force, the Army Quartermaster Corps in December 1952 purchased a total of 1,109,663 pounds (valued at \$630,940) of fresh and frozen fishery products (see table). This was a decrease of 45.9 percent in quantity and 42.8 percent in value as compared with the previous month, and 51.5 percent in quantity and 45.6 percent in value less than in December 1951. December 1952 purchases were the lowest by the Quartermaster Corps since April 1950 (pre-Korea)--an indication that buying practices may have been altered to the extent that heavy purchases are made when fishery products are plentiful.

Purchases of fresh and frozen fish by the Army Quartermaster Corps in 1952 amounted to 32,275,567 pounds (valued at \$15,049,599), an increase of 1.4 percent in quantity and 9.3 percent in value as compared with 1951, and 80.0 percent in quantity and 103.4 percent in value more than in 1950.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (December and Twelve Months of 1952 and 1951)								
Q U A N T I T Y				V A L U E				
December		January-December		December		January-December		
1952	1951	1952	1951	1952	1951	1952	1951	
Lbs.	Lbs.	Lbs.	Lbs.	\$	\$	\$	\$	
1,109,663	2,225,362	32,275,567	31,843,701	630,940	1,160,779	15,049,599	13,771,350	

Prices paid for fresh and frozen fishery products by the Department of the Army in 1952 averaged 46.6 cents per pound as compared with 43.2 cents in 1951 and 41.4 cents for 1950. This increase is due for the most part to the general price rise during the past few years which has taken place in fishery products as well as all other commodities.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.



Fishery Products Marketing Prospects for 1953 and Review for 1952

PROSPECTS FOR 1953: Current indications point to a somewhat weaker civilian demand for fishery products in 1953 than last year. Per-capita consumption of fresh and processed fish and shellfish may be about as large as in 1952, but retail prices this year may not average quite as high as last year. Fishery products are expected to encounter more competition from meats and poultry products for the consumers' food dollar than in 1952.

Domestic supplies are sufficiently large to maintain civilian per-capita consumption of fishery products during the next few months at about the same rate as in the comparable part of 1952. Cold-storage stocks of frozen fishery products on January 1, 1953, were at a record-high level for that time of year, and will be more than adequate to meet domestic needs until the 1953 commercial-fishing operations

begin to expand seasonally after mid-spring. Total canned fish stocks are estimated to be about as large as in early 1952 and sufficient for civilian needs until the new packs start moving to market after mid-year. Through most of 1953, less canned California sardines (pilchards) will be available for the domestic market and for export because of the unusually small pack last year. However, supplies of many of the other popular types of canned fishery products will be about as large or larger than in the comparable part of 1952:

The international trade of the United States in fishery products in 1953 is expected to follow the same pattern as last year. Imports of these commodities are expected to be larger than last year, although the increase may not be as large as that which occurred between 1951 and 1952. Some further decline in exports of fishery products is anticipated to result from the still smaller exportable supplies of those canned fishery products which are popular in our foreign markets.

REVIEW OF 1952: U. S. civilian per-capita consumption of fishery products in 1952 was slightly smaller than in the previous year. Some declines in consumption were indicated for many of the important fresh and processed products. The Bureau of Labor Statistics index of retail prices for all edible fishery products in urban areas for the year as a whole averaged slightly lower than for 1951, after declining in every month beginning with March.

The commercial catch of edible fish and shellfish in 1952 was somewhat smaller than a year earlier. Most of the decline resulted from the almost complete failure of the sardine (pilchard) fishery in California.

Commercial freezings of edible fishery products (in 1952) in the United States and Alaska were smaller than in 1951. Cold-storage holdings of fish and shellfish at the end of 1952 amounted to 193 million pounds, a little over 14 percent larger than a year earlier. An important part of the cold-storage stocks was imported frozen groundfish and other fillets.

Canned fish and shellfish production was somewhat smaller than in 1951. The decline in the total output resulted mainly from the significant reduction in the pack of California sardines. However, to a large extent this was offset by a near-record volume of tuna packed in the continental United States, and a sharp increase over 1951 in the output of canned anchovies, mackerel, and Maine sardines. The pack of salmon in 1952 was somewhat smaller than that of a year earlier. To some extent the decline in output of salmon was offset by increased imports from Canada and by a reduction both in purchases by U. S. military agencies and exports. Nevertheless, civilians had less canned salmon per person than in 1951, a continuation of the downward consumption trend of recent years.

Imports of edible fishery products were large in 1952. The quantity of frozen groundfish (cod, haddock, hake, pollock, cusk, and ocean perch) fillets received from abroad is estimated to have reached a record high of almost 108 million pounds, 24 percent larger than corresponding imports in 1951. Canned tuna and bonito imports in 1952 totaled 37 million pounds, approximately 60 percent larger than a year earlier. Doubling of shipments from Japan accounted for most of the increase.

Exports of edible fishery products from the United States, on the other hand, were smaller in volume than in 1951. The out movement of canned salmon, mackerel, and sardines--our principal export commodities among the edible fishery products--amounted to about 43 million pounds, almost 70 percent below 1951. The export decline resulted largely from the very small catch and pack of California sardines.

Military purchases of fresh and frozen fishery products in 1952 amounted to 32 million pounds, approximately equal to the preceding year's total. On the other hand, withdrawals from domestic market supplies of the major types of canned fish (i.e., salmon, sardines, and tuna) were 10 million pounds, about 38 percent smaller than the quantity taken by the military in 1951.

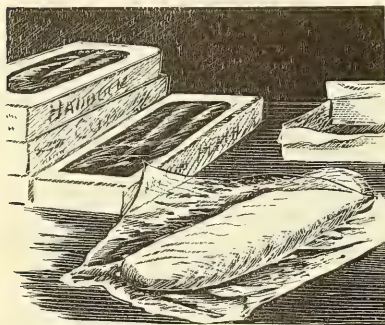
This analysis is based on a report prepared by the Bureau of Agricultural Economics, U. S. Department of Agriculture, in cooperation with the U. S. Fish and Wildlife Service, and published in the former agency's January-March 1953 issue of the National Food Situation.



Imports of Groundfish Fillets Reach New High in 1952

United States 1952 imports of groundfish (including ocean perch) fillets amounted to 107,802,447 pounds--24 percent greater than the previous all-time high in 1951

(see table). Once again Canada led as the largest foreign supplier of groundfish fillets for the United States market, shipping 51 percent of the total; followed by Iceland who shipped 33 percent, and Norway 10 percent. While exports to the United States from most countries have been increasing almost steadily, Iceland and Norway are mainly responsible for the substantial increases in recent postwar years. Since 1948, shipments from Iceland jumped 749 percent, while shipments from Norway were 26 times greater.



Domestic groundfish fillet producers in New England have been seeking Government protection in the form of higher tariffs against what they term an "ever-increasing influx of foreign competition." Hearings on groundfish fillets were held by the U. S. Tariff

Commission.

United States Imports of Groundfish (Including Ocean Perch) Fillets, 1948-52					
Country	TOTAL FOR YEAR				
	1952 ^{1/}	1951	1950	1949	1948
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Canada	54,807,347	57,695,407	51,067,779	42,459,033	49,141,992
Iceland	35,487,432	24,162,173	12,529,576	4,859,133	4,181,204
Norway	10,540,748	3,912,509	2,080,376	437,979	395,109
W. Germany	1,439,391	406,670	91	-	-
United Kingdom	1,658,307	279,049	93,858	-	-
Netherlands	1,355,264	263,719	11,475	20,845	-
Denmark	2,369,412	244,295	595,256	-	9,352
Greenland	132,800	133,550	239,100	-	-
Belgium	-	-	520	-	-
Sweden	2,400	-	122	-	40
South Africa	48	-	14	-	-
Brazil	348	-	-	-	-
Japan	40	-	-	-	-
New Zealand	60	-	-	-	-
St. Pierre	8,850	-	-	-	-
Total	107,802,447	87,097,172	66,618,167	47,776,990	53,727,697

^{1/}PRELIMINARY.

Commission in Washington, D. C., in 1951 and a study of the industry was made. In a report issued at Washington, D. C., in September 1952, the Commission found "...that groundfish fillets are not being imported into the United States in such increased quantities as a result of a concession granted in the General Agreement on Tariffs and Trade so as to cause or threaten serious injury to the domestic industry producing like or directly competitive products. Accordingly, in the judgment of the Commission, no sufficient reason existed for a recommendation to the President for the withdrawal or modification of the concession."

NOTE: ALSO SEE P. 72 OF THIS ISSUE.



Metal Cans--Shipments for Fishery Products, November 1952

Total shipments of metal cans for fish and sea food during November 1952 amounted to 7,062 short tons of steel (based on the amount of steel consumed in the manufacture of cans), a decrease of 17 percent when compared with shipments for October and 15 percent less than in November 1951. The pack of California sardines continued very light in November. Data on these shipments are from a January 16 report issued by the Bureau of the Census.



Total metal-can shipments for fishery products during the first 11 months of 1952 totaled 102,326 short tons of steel as compared with 102,270 short tons of steel for January-November 1951.

NOTE: STATISTICS COVER ALL COMMERCIAL AND CAPTIVE PLANTS KNOWN TO BE PRODUCING METAL CANS. REPORTED IN BASE BOXES OF STEEL CONSUMED IN THE MANUFACTURE OF CANS, THE DATA FOR FISHERY PRODUCTS ARE CONVERTED TO TONS OF STEEL BY USING THE FACTOR: 23.0 BASE BOXES OF STEEL EQUAL ONE SHORT TON OF STEEL.



Michigan

STUDY OF SEA LAMPREY CONTINUED: Thousands of sea lampreys were captured or their habits observed during 1951-52 as Michigan's Conservation Department study of the fish-killing parasite was continued, reports a recent news bulletin from that State agency. In the last few years, lampreys have nearly wiped out the commercial laketrout fishery of the Great Lakes, and more recently have been reported in some inland lakes.



SEA LAMPREY
(PETROMYZON MARINUS)



MOUTH OF SEA LAMPREY

THE SEA LAMPREY, WHICH FEEDS ON THE BLOOD AND FLESH OF FISH, IS PREYING ON THE LAKE TROUT OF THE GREAT LAKES AND IS THREATENING THAT FISHERY.

from spawning grounds in such a way that trout and other spawning fish could pass through. Nearly 700 adult lampreys were captured here.

A barrier dam on the Black River near Naubinway, Michigan, was in operation during the spawning run of the sea lamprey as part of the experimental control program in 1952. Attempts were made to block the lamprey

The Department also operated lamprey traps on the Carp Lake River in Emmett County in cooperation with the U. S. Fish and Wildlife Service. During the spawning season, 857 lampreys were taken moving upstream. Downstream movement on the river was checked by another trap that took nearly 5,500 adult and young lampreys during the fiscal year (July 1, 1951, to June 30, 1952).

Also, persistent reports led to a study of suspected inland lakes. Of the 19 checked, Burt, Mullet, Big Platte, Charlevoix, and Devoe lakes were found to have resident lamprey populations. However, none is badly troubled by this predator.

* * * * *

PROGRESS IN LAKE TROUT BIOLOGICAL STUDIES: Biological studies of the lake trout during the last six years in Lake Michigan and Huron by Michigan's Department of Conservation have shown some success, but obstacles have been many and progress has been slow, states a recent bulletin from that Agency.

In order to learn more about the movements and growth rates of lake trout, fingerlings with clipped fins were planted some years ago in Lake Michigan and Huron. To date 1,599 have been recovered in Lake Michigan. Of the total recovered, only about 230 were of legal size, the remainder of sublegal size. During 1952, only 11 lake trout with deformed fins were turned in to the Department--10 sublegal and 1 legal-size fish. Research biologists doubt that any of these came from the original plantings.

Commercial fishermen are paid \$2.00 for each sublegal-size and \$4.00 for each legal-size lake trout believed to be from the fin-marked stock. Although many of the fish were "doubtful recoveries," others were almost certainly from the original group and have provided some knowledge to research men.

The study is continuing, but few additional recoveries are expected in the present program.



Pacific Gray Whales in Winter Migration to Breeding Grounds

In January the gray whales of the Pacific began moving southward along the coast of California to their winter breeding grounds, according to a U. S. Fish and Wildlife Service news release.

These strange animals make an annual migration to certain bays in Lower California to bear their calves, returning later to feed in the ocean waters as far north as the Gulf of Alaska. Once very abundant, they were almost exterminated by whalers who operated in these confined bays. Now protected, their numbers have increased so that they are counted in the thousands.

Whales like other mammals breathe air and must hold their breathe when below the surface of the water. They must spend much time at the surface where they may be counted. The gray whale, during this migration, follows the beach closely and may be counted as he surfaces within sight of land. The slate-colored gray whale is one of the smaller of the whales, with an average length of 40 feet. The blue or sulphur-bottom whale reaches a maximum length of 106 feet and a weight of over 100 tons. But these 40-foot animals travel leisurely close inshore through the clear waters of southern California at six or seven miles an hour.

The Fish and Wildlife Service's expert on whales and whaling has taken up his post at the Scripps Institution of Oceanography at La Jolla in partial fulfillment of the United States' responsibilities as a member of the International Whaling Convention for the conservation of whales. He is making systematic observations to determine the size of the herd of gray whales, and will follow them later to the southern wintering grounds to complete his census. In order to insure that whaling treaty requirements are met, whaling permits are now required for United States nationals to take these animals, and to establish whaling stations. These requirements are designed to eliminate all wasteful practices.

The once great American whaling industry (100 years ago over 700 whaling ships, involving an investment of \$40 million, were engaged in the business) is temporarily dormant because of a lack of demand for the products. The business may be revived because the whale meat is similar to beef in flavor and texture, and is extensively used for food in Japan, as well as in several European countries, and has recently been introduced in the United States. It has been estimated that one whale could produce as much meat as a herd of 100 cattle.

The International Whaling Commission, made up of representatives of the 17 treaty Governments, meets annually. This year the meeting will be in June at London.



Pacific Oceanic Fishery Investigations

ARTIFICIAL TUNA-BAIT TRIALS: The use of fish extracts in attracting surface tuna schools was tested in the first of a series of sea trials which commenced during the week of January 26, reports the Service's Pacific Oceanic Fishery Investigations.

The material used had been previously tested by Dr. A. L. Tester on tuna held in University of Hawaii ponds and found to be a strong attractant to the fish held in captivity. The initial sea trial by the research vessel Hugh M. Smith will stress methods of spreading the extract in the water and observing the reaction of the fish to the material.

JAPANESE FISHERIES TRAINING SHIP TO VISIT HAWAII: The Shunkotsu Maru, a Japanese fisheries training ship with 47 fisheries trainees on board, was expected to stop at Hawaii on or about February 9, according to a report from POFI. This 600-ton vessel intends to fish between Japan and Hawaii. It was learned she would stay at Honolulu for about one week and visit Hilo on the island of Hawaii before continuing its training cruise.

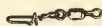
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TUNA SCOUTING METHODS STUDIED BY "CHARLES H. GILBERT" (Cruise 6 and POFI Flights 2 and 3): The study of methods for scouting surface schools of tuna in the Hawaiian area, and a survey of biological and oceanographic conditions in December were the objectives of the Service's Pacific Oceanic Fishery Investigations (POFI) research vessel Charles H. Gilbert. The vessel left Honolulu December 9 and returned December 19, 1952. After sailing due south from Honolulu, the vessel then headed due east to Hawaii. It worked around Hawaii five days before cruising along the windward side of the chain to Kauai and Niihau. Flights were made on December 12 and 18 from Barbers Pt., N.A.S., along the course of the vessel and north to 23° 40' N. latitude.

The watch for tuna, birds, and other organisms was favored by good weather throughout the cruise. Comparable numbers of fish schools were sighted in roughly the same waters by the vessel and plane observers. Schools of small skipjack were encountered by the vessel south of Oahu, around Hawaii, off Maui and Molokai, and near Niihau; fish being caught from the area south of Oahu and off Niihau. Bird sightings were scanty, shearwaters being notable by their comparative absence; the presence of jaegers and skuas (unrecorded in mid-Pacific waters prior to this year) suggests the possibility of marked irregularities in recent weather and/or hydrographic patterns. Schools of cetaceans were seen from time to time; motion pictures of three species were obtained and one porpoise was harpooned for study.

Difficulty in obtaining bait in sufficient quantities made efforts at fishing schools unsatisfactory. Incidental trolling with two nonstandard lures for 100 hours resulted in a catch of three yellowfin, three dolphin, and one little tuna. Morphometrics were taken on selected specimens, and a series of skipjack from a catch of 134 was saved for a study of food, sex and maturity, and length-weight relationships, and a comparative study of various length measurements versus post-mortem states of the fish.

Hydrophone measurements and recordings were made of vessel noise and the sounds produced by various organisms. Eighty-three BT. casts were made, at hourly intervals during the day. Continuous records of near-surface temperatures were obtained and the depth recorder was operated routinely when under way for indications of deep-swimming organisms. Notable temperature inversions were detected in Hilo Bay, where also the vitality of nehu has apparently dropped sharply in the course of the past month.



United States and Alaska Fisheries

LEADING FISHERY PORTS IN 1952: San Pedro, California, once again led all other fishing ports in the United States in 1952, with estimated total landings of 385,000,000 pounds, valued at \$38,000,000. However, these landings were 29



SAN PEDRO PILCHARD FLEET.

percent less than in 1951, according to the U. S. Fish and Wildlife Service's Branch of Commercial Fisheries. The failure of the pilchard fishery in 1952 accounted for this large decrease. Gloucester, Massachusetts, was again second with estimated landings of 226,000,000 pounds—13 percent less than in 1951 due to lighter ocean perch landings. Because of record menhaden landings, Lewes, Delaware, was in third place, replacing Boston, Massachusetts, which dropped to fifth place in 1952. Fishery landings, together with landed values, at leading United States ports follow:

Landings of Fishery Products at Leading U. S. Ports in 1952
(Quantity and Landed Values)^{1/}

Port	Quantity	Landed Value
	Lbs.	\$
San Pedro, California	385,000,000	38,000,000
Gloucester, Massachusetts	222,000,000	9,600,000
Lewes, Delaware	210,000,000	2/
Cameron, Louisiana	195,000,000	2/
Boston, Massachusetts	173,000,000	14,300,000
Empire, Louisiana	140,000,000	2/
Pascagoula, Mississippi	130,000,000	2/
San Diego, California	110,000,000	17,000,000

^{1/}PRELIMINARY DATA.

^{2/}NOT AVAILABLE.

In 1952 other important fishery ports besides those listed in the table in approximate order of volume of landings were: Reedville, Va.; Amagansett, N. Y.; Fernandina, Fla.; Beaufort, N. C.; Tuckerton, N. J.; Port Monmouth, N. J.; and New Bedford, Mass. Except for New Bedford, landings at these ports consisted chiefly of menhaden, which is used for the production of fish meal, oil, and solubles.

Landings of Fishery Products at Leading U. S. Ports in 1951^{1/}

Port	Quantity	Landed Value
	Lbs.	\$
San Pedro, California	540,000,000	40,000,000
Gloucester, Massachusetts	260,000,000	17,600,000
Boston, Massachusetts	172,000,000	14,000,000
San Diego, California	170,000,000	26,000,000
Lewes, Delaware	166,000,000	2/
Reedville, Virginia	126,000,000	2/
Pascagoula, Mississippi	118,000,000	2/
New Bedford, Massachusetts	79,300,000	11,800,000
Monterey, California	70,000,000	2,225,000

^{1/}PRELIMINARY DATA.

^{2/}NOT AVAILABLE.

* * * * *

CATCH OF IMPORTANT FISH AND SHELLFISH, 1952: The estimated catch of edible and inedible fish and shellfish in the United States and Alaska during 1952 totaled about 4.3 billion pounds, a slight decline from the 4.4 billion pounds landed in 1951. The estimated total landed value during 1952 was \$335,000,000—\$10,000,000 less than in 1951. Menhaden once again was the leading species landed with a record total of 1.3 billion pounds. Salmon (all species) led all other food fish, although landings were 13 percent less than in 1951. The other leading species landed in order of importance were tuna, shrimp, ocean perch, and haddock (see table).

U. S. and Alaska Catch of Important Fish and Shellfish 1952 & 1951 ^{1/}		
Species	1952	1951
	Lbs.	Lbs.
Menhaden	1,300,000,000	1,100,000,000
Salmon (all species)	350,000,000	400,000,000
Tuna and tuna-like fish	340,000,000	322,000,000
Shrimp	200,000,000	205,000,000
Ocean perch	189,000,000	260,000,000
Haddock	165,000,000	156,000,000
^{1/} PRELIMINARY DATA.		

In 1951, pilchard was included among the leading species with landings of 325,000,000 pounds. However, the 1952 season was almost a complete failure with a catch of about 6,650,000 pounds, which relegates this species to an insignificant position. The bulk of the pilchard catch is canned.



U. S. and Hawaii Canned Tuna and Tuna-Like Fish Pack, 1952

The United States and Hawaii canned tuna and tuna-like fish pack in 1952 amounted to 9,115,202 standard cases, valued at \$113,000,833 to the packers (table

Table 1 - Canned Tuna and Tuna-Like Fish Pack by Species and Area, 1952 (Quantity in Standard Cases and Value to Cannery)									
Species	CALIFORNIA			WASHINGTON, OREGON, AND HAWAII			ATLANTIC COAST		
	Quantity	Total	Avg. Price	Quantity	Total	Avg. Price	Quantity	Total	Avg. Price
	Std. Cases ^{1/}	Value	Per Std. Case ^{1/}	Std. Cases ^{1/}	Value	Per Std. Case ^{1/}	Std. Cases ^{1/}	Value	Per Std. Case ^{1/}
Tuna:									
Albacore	1,647,669	24,032,879	15.01	740,657	10,097,021	13.63	-	-	-
Yellowfin	2,401,245	2,468,501,103	12.09	3/4,424	3/09,092	8.84	-	-	-
Bluefin	94,898	1,179,701	12.43	-	-	-	-	-	-
Skipjack	1,641,870	20,379,403	12.42	3/	3/	-	-	-	-
Tuna	146,567	1,390,553	13.58	-	-	-	-	-	-
Miscellaneous ...	-	-	-	3/195,743	3/2,487,071	12.71	4/204,512	3/2,355,904	11.52
Total tuna	7,742,966	96,085,611	12.41	940,824	12,653,184	13.42	204,512	2,355,904	11.52
Tuna-Like Fish:									
Bonito	47,213	415,165	8.79	-	-	-	-	-	-
Yellowtail	179,797	1,522,969	8.47	-	-	-	-	-	-
Total tuna-like fish	227,000	1,938,134	8.54	-	-	-	-	-	-
1952 Grand Total ..	7,969,966	98,023,745	12.30	940,824	12,653,184	13.42	204,512	2,355,904	11.52
1951 Grand Total ..	7,454,315	86,830,304	11.82	645,232	8,653,963	13.41	137,178	1,561,939	11.39
1950 Grand Total ..	7,971,897	98,404,253	12.34	857,585	13,458,322	14.06	87,059	966,919	11.11

^{1/}CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 NO. 2 TUNA CANS TO THE CASE, EACH CAN 7 OUNCES NET WEIGHT FOR SOLID MEAT OR 6 OUNCES NET WEIGHT FOR FLAKES, CHURNS, OR GRATED.

^{2/}SMALL PRODUCTION OF LIGHT MEAT AND DARK MEAT PACKED FROM MIXED TUNA SPECIES INCLUDED WITH YELLOWFIN PRODUCTION.

^{3/}MISCELLANEOUS TUNA INCLUDES ALL SKIPJACK AND SOME YELLOWFIN PRODUCTION.

^{4/}INCLUDES ALBACORE, YELLOWFIN, BLUEFIN, SKIPJACK, AND LITTLE TUNA.

1). This is the first year's statistics in which the pack of tuna in Hawaii has been included and, therefore, comparison with previous years is difficult. However, from all indications it appears that the 1952 pack was below that reported for the record year of 1950 when United States canners packed 9,016,541 standard cases, valued at \$112,830,094 (table 2). As in the past, the bulk of the pack was produced from tuna caught by domestic vessels, but there was an increase in the percentage produced from imported frozen tuna, mainly from Japan, with some from Peru and Chile.

California continued as the leading State for canning tuna, packing 87.4 percent of the total. There was a small pack in the East Coast States of Maine, Massachusetts, Maryland, and South Carolina.

The average price per standard case in 1952 (\$12.40) was 3.2 percent higher than in 1951 (\$12.02), but 22.5 percent below the record high of \$16.00 per case in 1948 (table 3). There was a high inventory of canned tuna on hand at the beginning

Table 2 - Canned Tuna and Tuna-Like Fish Pack by Species, 1950-52 (Quantity in Standard Cases and Value to Cannery)

Species	1952 Total			1951 Total			1950 Total		
	Quantity Std. Cases ^{1/}	Total Value	Avg. Price Per Std. Case ^{2/}	Quantity Std. Cases ^{1/}	Total Value	Avg. Price Per Std. Case ^{2/}	Quantity Std. Cases ^{1/}	Total Value	Avg. Price Per Std. Case ^{2/}
Tuna:									
Albacore	2,598,326	34,129,900	13.19	1,563,753	19,958,605	12.76	2,053,842	28,877,954	14.06
Yellowfin	4,016,976	48,540,195	12.08	4,970,995	48,365,425	11.88	4,945,346	51,225,806	12.07
Bluefin	94,888	1,179,701	12.43	371,922	3,797,817	11.09	3,51,390	3,564,160	10.99
Skipjack	1,641,278	20,379,405	12.42	3,128,600	35,238,212	11.87	3,282,351	37,032,399	11.95
Tonno	146,567	1,990,523	13.58	160,656	2,180,231	13.57	244,610	3,469,125	14.18
Miscellaneous	5,400,255	4,842,975	12.10	5,137,178	5,156,939	11.29	5,07,029	5,966,919	11.11
Total tuna	8,869,202	111,062,639	12.50	8,133,274	99,106,223	12.06	8,944,598	112,136,353	12.54
Tuna-Like Fish:									
Bonito	47,213	415,165	8.79	14,469	134,364	9.29	12,951	122,411	9.45
Yellowtail	178,787	1,522,969	8.47	90,982	809,613	8.90	58,992	571,320	9.68
Total tuna-like fish	227,000	1,938,134	8.54	105,451	943,977	8.95	71,943	693,731	9.64
Grand Total	9,115,202	113,000,833	12.40	8,238,725	99,046,206	12.02	9,016,541	112,830,084	12.51

1/CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 NO. 1 TUNA CANS TO THE CASE, EACH CAN 7 OUNCES NET WEIGHT FOR SOLID MEAT OR 6 OUNCES NET WEIGHT FOR FLAKES, CHUNKS, OR GRATED.
 2/SMALL PRODUCTION OF LIGHT MEAT AND DARK MEAT PACKED FROM MIXED TUNA SPECIES INCLUDED WITH YELLOWFIN PRODUCTION.
 3/SMALL PRODUCTION OF SKIPJACK TUNA INCLUDED WITH BLUEFIN PRODUCTION.
 4/SMALL PRODUCTION OF BLUEFIN TUNA INCLUDED WITH SKIPJACK PRODUCTION.
 5/INCLUDES ALBACORE, BLUEFIN, SKIPJACK, YELLOWFIN, AND LITTLE TUNA.

of the year and the market was not in a healthy state. However, conditions improved steadily through 1952 and as the year closed the market was reasonably sound.

Table 3 - Canned Tuna and Tuna-Like Fish Pack, 1941-52^{1/} (Quantity in Standard Cases and Value to the Cannery)

Year	1952 Total			Year	1951 Total		
	Quantity Std. Cases ^{2/}	Total Value	Avg. Price Per Std. Case ^{2/}		Quantity Std. Cases ^{2/}	Total Value	Avg. Price Per Std. Case ^{2/}
1952	9,115,202	113,000,833	12.40	1946	4,764,484	59,135,823	12.56
1951	8,236,725	99,046,206	12.02	1945	4,531,565	47,407,451	10.46
1950	9,016,541	112,830,094	12.51	1944	3,560,020	40,836,117	11.80
1949	7,290,520	97,710,325	13.40	1943	2,696,073	31,430,189	11.66
1948	7,037,758	112,612,296	16.00	1942	2,484,749	30,742,493	12.37
1947	5,894,495	90,609,175	15.37	1941	2,931,581	19,397,887	6.62

1/DATA FOR YEARS PRIOR TO 1952 DO NOT INCLUDE PACK IN HAWAII.
 2/CASES OF VARIOUS SIZES CONVERTED TO THE EQUIVALENT OF 48 NO. 1 TUNA CANS TO THE CASE, EACH CAN 7 OUNCES NET WEIGHT FOR SOLID MEAT OR 6 OUNCES NET WEIGHT FOR FLAKES, CHUNKS, OR GRATED.



Wholesale and Retail Prices

WHOLESALE PRICES, DECEMBER 1952: December 1952 average prices for edible fishery products at wholesale were down considerably from the previous month and December 1951. Good production for this time of year and seasonally light demand caused prices to fall. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index for December was 104.5 percent of the 1947-49 average (see table 1)--7.7 percent lower than in November and 7.8 percent below December 1951, the Bureau of Labor Statistics of the Department of Labor reports.

Nearly all quotations for the items in the drawn, dressed, or whole finfish subgroup in December 1952 were quoted considerably below the previous month and December 1951. The index for this subgroup dropped 21.8 percent from November to December and was 18.5 percent below a year earlier. A substantial drop in the price of fresh large offshore drawn haddock, and smaller declines for whitefish at Chicago and yellow pike at New York City were responsible for the general decline in this subgroup. But fresh whitefish at New York City and lake trout at Chicago went up slightly.

Fresh processed fish and shellfish prices rose 2.4 percent above November and 4.4 percent over December 1951. While the fresh haddock fillet price at Boston dropped commensurate with the ex-vessel price for drawn haddock, prices for large

shrimp rose considerably from November to December. Fresh and frozen shrimp were reported in very short supply. Compared with December 1951, prices for fresh haddock fillets and oysters were considerably lower but shrimp prices were substantially higher.

Table 1 - Wholesale Average Prices and Revised Indexes for Edible Fish and Shellfish, December 1952 and Comparisons									
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices (\$)		Indexes (1947-49 = 100)				
			Dec. 1952 ¹	Nov. 1952	Dec. 1952	Nov. 1952	Oct. 1952	Dec. 1951	
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned).....									
Fresh and Frozen Fishery Products:					104.5	2/113.2	101.6	113.3	
Drawn, Dressed, or Whole Finfish:					103.4	2/105.6	111.8	133.2	
Haddock, large, offshore, drawn, fresh	Boston	lb.	.11	.17	113.3	177.0	113.4	167.8	
Halibut, Western, 20/80 lbs., dressed, fresh or frozen	N.Y.C.	"	.34	.44	104.5	137.0	130.0	101.4	
Salmon, king, lge. & med., dressed, fresh or frozen	"	"	.49	.49	109.1	109.7	101.8	121.0	
Whitefish, mostly Lake Superior, drawn (dressed), fresh	Chicago	"	.34	.44	83.0	109.1	112.8	112.0	
Whitefish, mostly Lake Erie pound or gill net, round, fresh	N.Y.C.	"	.48	2/.47	96.1	94.0	106.2	113.2	
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.61	.59	124.0	120.9	99.4	129.1	
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	N.Y.C.	"	.39	.41	91.4	96.1	99.7	101.3	
Processed, Fresh (Fish and Shellfish):					116.5	113.8	103.7	111.6	
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.27	.38	91.9	129.3	91.9	149.4	
Shrimp, lge. (26-30 count), headless, fresh or frozen	N.Y.C.	"	.70	.61	110.7	96.4	89.3	81.3	
Oysters, shucked, standards	Norfolk area	gal.	5.25	5.25	129.9	129.9	123.7	136.9	
Processed, Frozen (Fish and Shellfish):					110.9	102.8	103.6	106.2	
Fillets:									
Flounder (yellowtail), skinless, 10-lb. pkg.	Boston	lb.	.34	.34	119.2	119.2	124.4	145.8	
Haddock, sml., skins on, 10-lb. cello-pack	"	"	.27	.25	98.5	93.9	93.0	114.2	
Ocean perch, skins on, 10-lb. cello- pack	Gloucester	"	.24	.24	114.4	114.4	119.2	125.2	
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	"	.73	.62	111.8	94.9	92.6	78.0	
Canned Fishery Products:					94.6	2/94.7	92.0	99.5	
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	18.93	2/18.93	99.1	2/99.1	93.9	109.6	
Tuna, light meat, solid pack, No. 1/2 tuna (7 oz.), 48 cans per case	Los Angeles	"	14.50	14.50	90.5	90.5	90.5	81.2	
Sardines (pilchards), Calif., tomato pack, No. 1 oval (15 oz.), 48 cans per case	"	"	9.25	9.38	108.0	109.4	109.4	100.2	
Sardines, Maine, keyless oil, No. 1/4 drawn (3 1/2 oz.), 100 cans per case	N.Y.C.	"	7.20	7.20	76.6	76.6	76.6	110.5	
1/REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY, IF AVAILABLE) DURING WEEK BEGINNING DECEMBER 15. 2/REVISED.									

1/REPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY, IF AVAILABLE) DURING WEEK BEGINNING DECEMBER 15.

2/REVISED.

Higher prices for frozen haddock fillets and shrimp were entirely responsible for the increase of 7.9 percent in the processed frozen fish and shellfish index from November to December 1952. Prices for frozen fillets of flounder and ocean perch remained steady at November levels. Compared with December 1951, processed frozen fish and shellfish prices in December were 4.4 percent higher entirely due to considerably higher prices for frozen shrimp, which more than offset lower prices for frozen fillets of flounder, haddock, and ocean perch.

Canned fishery products prices in December were 0.1 percent below November and 4.9 percent less than in December 1951. The only change from November was for California sardines (pilchard) which declined slightly; all other canned items remained unchanged. However, while December quotations for canned salmon and Maine sardines were substantially below the same month in 1951, those for canned tuna and California sardines were somewhat higher.

RETAIL PRICES, DECEMBER 1952: Downward was the trend for retail prices of all foods purchased from November 15 to December 15, 1952, by moderate-income urban families. The drop was 1.0 percent and these prices also were 1.0 percent lower than during the same period in 1951. Although this is a season when normal price rises can be expected, these prices have declined steadily for four straight months.

Prices of all finfish (fresh, frozen, and canned) in mid-December also declined (0.6 percent), but at a much slower rate than other foods. Finfish prices were considerably lower (4.9 percent) than a year earlier.

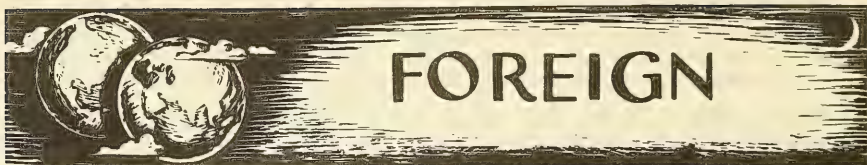
Table 2 - Adjusted Retail Price Indexes for Foods and Finfish, December 15, 1952, with Comparisons				
Item	Base	I N D E X E S		
		Dec. 15, 1952	Nov. 15, 1952	Dec. 15, 1951
All foods	1935-39 = 100	229.9	232.3	232.2
All finfish (fresh, frozen, and canned)	do.	333.9	335.9	351.2
Fresh and frozen finfish	1938-39 = 100	288.7	290.8	296.7
Canned salmon: pink	do.	431.6	433.1	475.1

Fresh and frozen finfish retail prices decreased 0.7 percent from November 15 to December 15 and were 2.7 percent lower than in mid-December 1951. Canned pink salmon prices dropped 0.3 percent--the nineteenth straight month these prices have dropped--and were 9.2 percent below mid-December 1951.

Table 3 - Average Retail Prices and Price Ranges of Individual Finfish Products, December 15, 1952				
Product	Unit	U N I T E D S T A T E S		
		Range of Prices	Average Prices	
		Dec. 15, 1952	Dec. 15, 1952	Nov. 15, 1952
Frozen Finfish Fillets:				
Ocean perch	lb.	29-69	45.1	45.6
Haddock ²	lb.	29-75	50.4	50.5
Canned Finfish:				
Salmon, pink	16-oz. can	39-89	53.4	53.6
¹ /PRICED IN 46 CITIES OUT OF 56.				
² /PRICED IN 47 CITIES OUT OF 56.				

Frozen ocean perch fillets retailed at an average price of 45.1 cents per pound in mid-December and frozen haddock fillets at an average of 50.4 cents per pound; a year earlier frozen ocean perch fillets averaged 46.4 and frozen haddock fillets 50.9 cents per pound. Canned pink salmon retailed at an average price of 53.4 cents per 16-oz. can in mid-December, compared with 58.3 cents per can in mid-December 1951.





International

GREENLAND AND IRELAND CONSIDER EXTENDING TERRITORIAL FISHING LIMITS: A report from Copenhagen states that the Danish Government is considering a tightening of restrictions on foreign trawlers fishing in the Greenland area. Since Iceland extended her fishing limits, British trawlers have been fishing Greenland waters to an increasing extent, according to the Fishing News of November 29, a British trade periodical. However, a Greenland Fisheries Department biologist believes that it would be of no use to extend the Greenland territorial limits since most fishing takes place beyond any possible limit extension.

The Irish Republic is reported to be likely to follow the example of Norway in seeking permission from the International Court of Justice to extend the three-mile limit of its territorial waters to protect Irish fisheries from British and other trawlers.



Canada

TUNA FISHERIES: The tuna fisheries of Canada consist mostly of catches by vessels normally engaged in other fisheries. Canning is done in plants incidental to the handling of other species of fish, reports a January 7 dispatch from the U. S. Embassy at Ottawa. Tuna occurring in commercial quantities in Canadian waters are of two species. On the Pacific Coast the catch is made up of albacore (Germo alalunga) generally taken by trolling with red-feather lures. The catch is then frozen for subsequent canning. On the Atlantic Coast the tuna catch is made up almost entirely of bluefin (Thunnus thynnus). Other varieties of tuna (yellowfin, skipjack, etc.) are imported and canned in Canadian plants.

Tuna occurring in commercial quantities in Canadian waters are of two species. On the Pacific coast the catch is made up of the albacore (Thunnus alalunga), which is sometimes referred to by fishermen as the tuna or long-finned tuna. It is generally taken by trolling with red feather lures and is frozen for subsequent canning. On the Atlantic coast the catch, taken by trap net or by sports fishermen using lures, is made up almost entirely of the species Thunnus thynnus, which is also referred to as tuna, albacore, or bluefin.

British Columbia Fishery: The tuna fishery in British Columbia is not regarded as a large one, although in some years fairly large catches have been taken (table 1). Because of the uncertainty of the catch, very few boats are equipped exclusively for tuna fishing; most of the boats that do catch tuna are also engaged in some other fishery.

Vessels fishing commercially for tuna on the Pacific Coast are usually over 40 feet in length—large trollers, long-line boats, draggers, and seiners. It has

been estimated that the extra gear required for tuna fishing costs from C\$400 to C\$500 per vessel. There are four or five vessels in British Columbia specializing in tuna fishing, and if no tuna are available in British Columbia waters these craft fish in the offshore waters off the California and Oregon coasts.

Canning facilities for tuna in British Columbia are the same as those for salmon, and all plants are therefore able to can tuna with minor alterations in

Table 1 - British Columbia Tuna Catch, 1946-51

Year	Quantity	Landed Value	Avg. Price Per Lb.	Boats Licensed
	Lbs.	C\$	C¢	No.
1952	156,600	30,000	19.2	-
1951	189,500	33,161	17.5	96
1950	2,114,300	372,711	17.6	117
1949	2,230,800	362,596	16.3	124
1948	2,175,000	598,387	27.5	119
1947	796,500	211,650	26.6	92
1946	431,600	85,113	19.7	84

tuna loins from Japan instead of the whole fish.

In addition to the canned pack of tuna from Canadian-caught fish shown in table 2, the amount canned from imported Japanese tuna is shown in table 3.

In 1948, the Canadian Department of Fisheries maintained special tuna patrols to advise fishermen when and where tuna were available. Since then, while no special patrols have been kept up, any information gathered in the course of regular patrol duties of departmental boats has been passed on to the fishermen.

While the British Columbia tuna catch has not been large during the past two years, there is always the possibility that conditions in future years might provide a fishery at least equal to that of the period from 1948 to 1950. If the tuna are present they provide work for vessels, such as halibut long-liners during the periods when that fishery season is closed. Salmon trollers also can supplement their income with tuna catches.

Table 2 - British Columbia Canned Tuna Pack, 1948-51¹

Year	Pack	Value	Avg. Price/case
	Std. Cases ²	... (f.o.b. plant) ... C\$	C¢
1951 ..	1,457	49,538	34.00
1950 ..	18,575	555,957	29.95
1949 ..	15,254	430,674	28.25
1948 ..	20,248	783,103	38.70

¹/PACK FROM TUNA CAUGHT BY CANADIAN BOATS--IMPORTED TUNA NOT INCLUDED.
²/48 7-OZ. CANS PER CASE.

Of the total Canadian catch in 1948, it was estimated that 45 percent was caught off the west coast of Vancouver Island, 50 percent off the Queen Charlotte Islands, and 5 percent off the coasts of Washington and Oregon. In 1949, 75 percent of the catch was reported caught off the west coast of Vancouver Island and the remainder off the coasts of Washington and Oregon.

Table 3 - British Columbia Canned Tuna Pack from Imported Japanese Tuna, 1950-51

Year	Pack	Value	Avg. Price/case
	Std. Cases	... (f.o.b. plant) ... C\$	C¢
1951 ..	51,823	1,583,812	30.55
1950 ..	12,310	358,765	29.15

NOTE: NO TUNA WAS CANNED FROM JAPANESE IMPORTED TUNA IN 1948 AND 1949.

Atlantic Tuna Fishery: The tuna fishery of Nova Scotia may be considered under two classifications--the commercial fishery and the sport fishery. The product of the sport

fishery, however, enters the commercial trade as the fish landed by anglers are generally sold for disposition through normal trade channels.

Tuna are caught off Cape Breton Island and from Halifax to Yarmouth, and farther up the coast to the mouth of St. Mary's Bay. The commercial fishery, however, is centered in the trap-net fishery of St. Margaret's Bay and the sport fishery is centered at Wedgeport, Yarmouth County. From Wedgeport a few boats operate commercially with harpoons when conditions are favorable.

The commercial trap-net fishery has existed for many years. The traps are fixed position sites which are essentially set up for mackerel; however, a school of tuna striking in the bay is an important part of the trap-net operation. In 1952, there were approximately 100 licenced sites in St. Margaret's Bay. Only a very few of these, however, are considered to be good locations for catching tuna.

Table 4 - Nova Scotia Tuna Catch and Disposition, 1946-52
(Includes Catch by Commercial and Sport fishermen)

Year	Total Catch	Disposition of Catch (Product Weight)		
		Fresh Dressed	Frozen Dressed	Canned
	Lbs.	Lbs.	Lbs.	Std. Cases ^{1/}
1952	2/655,400	433,700	8,400	4,739
1951	3/469,900	103,800	56,400	7,562
1950	4/787,400	682,100	31,200	1,494
1949	958,400	475,000	85,000	8,536
1948	781,300	187,500	57,800	12,025
1947	1,706,900	459,400	-	19,184
1946	1,820,700	102,100	-	16,931

1/48 7-OZ. CANS PER CASE.

2/1952 SPORT CATCH: 359 FISH--161,761 LBS.

3/1951 SPORT CATCH: 383 FISH--190,913 LBS.

4/1950 SPORT CATCH: 424 FISH--155,360 LBS.

There is no tuna fleet as such in Nova Scotia. The trap nets are fished from ordinary fishing boats and dories and the sport fishing is conducted from Cape Island fishing boats equipped with the necessary angling gear. A tuna guide association maintains about 23 of these boats for sport fishing. Other fishermen around the coast also have boats and the necessary equipment available for charter.

Table 5 - Halifax, N. S., Average Tuna Prices, 1949-51

Year	Canned Tuna	Fresh Tuna	Frozen Tuna
	C\$ Per Case ^{1/}	C\$ Per Cwt. ^{2/}	C\$ Per Cwt. ^{2/}
1951	10.95	10.44	13.62
1950	9.45	8.81	16.76
1949	11.35	9.90	17.43

1/48 7-OZ. CANS PER CASE, F.O.B. PLANT

2/F.O.B. HALIFAX.

There are no canneries in Nova Scotia that operate for tuna alone. In 1952, canneries located at Clark's Harbour, Shelburne County, and Whale Cove, Digby County, packed less than 5,000 cases. Canning of tuna in Nova Scotia has been declining since the end of World War II.

With the exception of a small domestic cannery operation, the fresh and frozen tuna are shipped to Eastport, Maine (for canning), and to the Boston and New York markets for the fresh and frozen trade.

* * * * *

BRITISH COLUMBIA HERRING FISHING CURTAILED BY PRICE DISPUTE: Rejection of the latest ex-vessel herring price offer of the reduction plant operators by the fishermen's union makes it appear unlikely that any commercial herring fishing will take place in British Columbia during the 1952/53 season, reports a January 8 U. S. consular dispatch from Vancouver. The herring fishing season opens in October and closes about March 15.

Prior to October 1952, plant operators offered fishermen C\$6.00 a ton for their herring catch, C\$2.40 a ton less than that paid the previous season. Processors pointed to the 50-percent drop in the herring oil price to justify their lower price offer. This offer was rejected and there was no fall herring fishing. Subsequently, operators informed the union that the price would be C\$5.50 a ton for herring caught after January 4, 1953 (when the oil content of the herring decreases). This was the latest offer rejected by the fishermen's union.

During the 1951/52 season British Columbia fishermen landed a total catch of 197,339 tons of herring, valued at approximately C\$10,000,000. A total of 107,108 tons of herring was landed before the Christmas Holiday and 90,231 tons after the first of the year.

* * * * *

BRITISH COLUMBIA WHALE PRODUCTION, 1952: Whaling off British Columbia in 1952 yielded 465 whales (see table) with a production of 568,351 U. S. gallons of whale oil, 233,738 U. S. gallons of sperm oil, and 2,165 short tons of meal. Only one company, operating a fleet of five vessels, caught and processed whales during this season--May 5 to September 25, 1952.

British Columbia Whale Catch, 1952	
Species	No.
Sperm	126
Humpback	61
Finback	240
Sei	22
Blue	16
Total	465

Most of the oil is exported to United States soap manufacturers, while the meal is converted into pet food for the domestic market, a January 8 U. S. consular report from Vancouver states.

* * * * *

COAST-TO-COAST TRUCKING SERVICE INAUGURATED: A large trailer van departed from Halifax, N. S., on January 12, inaugurating a daily Canadian coast-to-coast trucking service by a large Toronto trucking firm. This first shipment was expected to reach Vancouver, B.C., (the end of the run) about January 20. The cargo of this initial shipment included a shipment of fish for southern Ontario communities and 250 lobsters for veterans in a Vancouver military hospital.

The trucks will be equipped to handle all types of goods and produce, and will leave and arrive at Halifax daily, a January 23 U. S. consular dispatch from Halifax states. Halifax will be the focal point in the Maritime Provinces for these operations, but within a month it is expected that stations will be established in Moncton and St. John, N. B. Goods shipped from the Maritime area will ordinarily be carried nonstop to Toronto and from there transshipped for local distribution or further shipment.

Much of the present 4,200-mile run is through the United States but officials of the trucking firm hope that by 1956, when the trans-Canada highway is expected to be completed, the run will be on Canadian soil throughout the entire trip.



Chile

NEW FRESH FISH TRANSPORTATION REGULATIONS ANNOUNCED: Fresh fish transported in Chile can be packed only in new wooden boxes (which are to be used only once), and properly packed with ice. New regulations, effective January 1, 1953, require that not less than one-half kilogram (1.1 pounds) of chipped ice shall be used per

kilogram (2.2 pounds) of fish. These provisions were included in Decree 5239 of December 26, 1952, issued by the Chilean Bureau of Public Health and printed in the Diario Oficial de la Republica de Chile on January 14, 1953. Failure to comply with the terms of this decree will subject the shipper to the penalties provided in the sanitary code of the country, reports a January 19 U. S. Embassy dispatch from Santiago.



Colombia

IMPORT RESTRICTIONS ON CANNED FISH LIFTED: Canned or preserved fish may now be imported into Colombia from any source. Decree No. 8 of January 7, 1953, eliminated the requirements of Decree 1830 that imports of these products were limited to countries to which exports of certain listed items were made. The restriction was lifted because many countries to which Colombia exports these special items are not producers of canned or preserved fish, states a January 16 U. S. consular dispatch from Bogota.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, OCTOBER 1952, P. 59.

* * * * *

TUNA FISHERY: Tests to determine the potential tuna fishery off the Colombian coast will be carried out in the near future by a Barranquilla fish-canning firm. A modern United States west coast-type purse seiner will be used, reports a January 2 U. S. consular dispatch from Barranquilla. Arrangements have already been made with a private vessel captain from Balboa, C. Z., to make a reconnaissance of the area off Santa Marta by mid-January, if a fishing permit can be obtained for the captain from the Colombian Government.

The tuna catch is sold locally for consumption as fresh fish, except for the small quantities which have been purchased the past two years for canning. During the 1953 season the Barranquilla cannery intends to can as much of the catch as possible, and the new canning plant at Santa Marta will presumably also be in the market for tuna.

Tuna and bonito are not fished with hooks in Colombia, and the whole catch is made with nets near the beach in about 8 coves between Santa Marta and the neighboring hamlet of Taganga, where the ocean floor drops steeply away from the beach line. The method used, apparently dating from pre-Colombian times by the Indian coastal inhabitants, is as follows: a cove is partially closed off by a net running from the beach at one end out into the water for about 200 feet toward the opposite tip of land. The net is supported by floats and canoes and extends downward $6\frac{1}{2}$ to 10 feet weighted by sinkers. A lookout on a hill above the cove watches for an approaching school of fish (tuna, bonito, or mackerel). When the school is inside the closed end of the cove, the lookout signals and a number of fishermen disturb the water behind the fish while others haul the outboard end of the net in to shore. From 5 to 6 metric tons of fish have been caught in one day by this primitive method in the three coves nearest Santa Marta. Often as much as one ton is caught at a time. The fish are reported as being very plentiful there during the seasons, which are February, March, and April for albacore and bonito, and January and February for mackerel.

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FISH-CANNING INDUSTRY: Expanded markets, increased demand, limited capacity and quarters, and limited fish supplies are the problems facing Barranquilla's only fish cannery after two short years of operation, according to a December 12 U. S. consular dispatch from that city. This cannery commenced operations in 1950. Originally fish was canned only incidental to other products, but now it comprises the bulk of the plant's output. New and larger quarters will be occupied by the cannery in the near future.

It is hoped that the introduction of modern methods and equipment in the local fishing industry (where the most primitive conditions still prevail) will solve the supply problem. By supplementing the existing fleet of fishing canoes with a large boat of the Pacific purse-seiner type, and the gradual conversion of the industry to up-to-date methods, the supply of fish can be increased.

Daily production in a recent six-months period has averaged between 3,000 and 4,000 15-oz. oval cans of sardines and mullet. A 50-percent increase in production is expected in January 1953, when more machinery will be installed. Over 100 persons are now employed in the cannery and two shifts per day are operated. At the present time about 80 percent of the production is mullet, the most popular canned fish in Colombia, and 20 percent sardines (herring). However, from time to time and as available, bonito, mackerel, and shrimp are packed. The shrimp are packed dry, the bonito is put up in vegetable oil, and the others are packed in tomato paste. All ingredients are obtained locally. Since cans of the required quality are not available from local manufacturers, all are imported from the United States. Recently the Colombian Government reduced the import duty on oval cans.

Bonito canned at Barranquilla in 1952 totaled only about 100 cases and in 1951 about 500 cases. It carries a bilingual label reading "Atun (Bonito) - Bonito Tuna Style." This light pack was not due to a scarcity of bonito, but rather by preoccupation with other species--mullet and sardines. It is reported that bluefin tuna, bonito, and mackerel do occur in Colombian waters in commercial quantities.

At the present time between 2 and 3 metric tons of fresh fish are received at the plant each day, purchased through the firm's buying offices in Barranquilla and the neighboring towns of Cartagena, Galerazamba, Santa Marta, Isla del Rosario, and Cienaga. The six suppliers purchase in turn from an estimated total of about 300 individual fishermen who work with small throw nets from dugout canoes. The cannery has found it exceedingly difficult to maintain a regular supply in excess of the 2 or 3 tons per day, but it is confident that the waters off Colombia will readily yield far greater returns to modern equipment. Prices currently paid by the cannery for fish are 38 centavos per kilo (6-3/4 U. S. cents per pound) for mullet and sardines, one peso per kilo for shrimp (18 U. S. cents per pound) and from 1½ to 2 pesos (60-80 U. S. cents) per fish for tuna, depending on size.

Fish are transported to Barranquilla by launch, packed in ice, and upon receipt at the plant they are sealed, cut, washed, and packed in the cans by hand; then precooked by steam. After precooking the mullet, the open cans are removed from the cooker and the large backbones are removed by hand. After tomato paste has been added by hand, the cans are placed on a conveyor and passed through an exhaust box to the closing machine, then into a sterilizing retort. After cooling and removal from the retorts, the cans go to the shipping department for labelling and packaging. The finished product is held briefly for observation and regular laboratory tests are made of samples.

The plant's output presently goes to four exclusive wholesale distributors located in Bogota, Medellin, Cali, and Barranquilla. Table 1 gives factory prices to wholesalers.

Table 1 - Canned Fish Factory Prices to Wholesalers			
Species	Size of Case	Price per Case	
		Pesos	US\$
Sardine or mullet	48 15-oz. oval	60	24.00
Sardine or mullet	100 5-oz. cyl.	50	20.00
Tuna (bonito) in oil ..	48 7-oz. cyl.	76	30.00
Shrimp, dry pack	48 5-oz. cyl.	84	33.50

Canned fish were included on the list of articles prohibited from importation into Colombia under Decree 637 of March 20, 1951. However, regulations recently issued under authority of Decree 1830, of August 1, 1952, authorize the importation of canned sardines and other fish through utilization of special "import rights" acquired through the sale of specified Colombian products in the country of origin of the canned fish, and available to the public at a considerable premium over the official exchange rate. It reportedly costs about 75 pesos (US\$30.00) to import a case of sardines similar to those packed in Colombia and sold to distributors for 60 pesos per case (US\$24.00). It is still too early to define the full effect of the new regulations on the canned fish trade in Colombia.

Prior to 1950 no canned fish was produced in Barranquilla, and a close indication of the market then enjoyed by the article is given in the table of imports (table 2). The sharp decline in 1949 is accounted for by adoption of severe import restrictions by the Colombian Government at that time.

So far as can be determined, there is only one other fish cannery in Colombia, at Santa Marta, which announced it was commencing to can fish on July 15, 1952.

Table 2 - Colombian Imports of Fish Conserved in Oil or Sauce, 1946-49

Year	Net Weight	Value c.i.f.	
	Lbs.	Pesos	US\$
1949	320,500	154,722	61,600
1948	2,455,100	1,188,581	473,500
1947	4,448,800	2,717,556	1,082,700
1946	1,395,000	934,464	373,000

Although detailed data on this firm are not available, its output is believed to be small but growing.

It is evident that with continued government protection the fish-canning industry has reasonably bright prospects, except for the fundamental limitation which must now be overcome if further progress is to be made--the primitive con-

dition of the country's small fishing industry.



Egypt

FAO TO PROVIDE TECHNICAL ASSISTANCE FOR FISHING INDUSTRY: Two fishery experts--one statistician and one technologist--will be provided the Egyptian fishing industry by the United Nations Food and Agricultural Organization (FAO) in an agreement signed with the Egyptian Government on December 20, 1952. Also to be provided by the agreement for technical assistance for the fishing industry will be one scholarship for an Egyptian to study fish salting and sardine canning in a foreign country, states a December 27 dispatch from the U. S. Embassy at Cairo.



Japan

"LETTER OF ASSURANCE" STILL REQUIRED FROM U. S. FROZEN TUNA IMPORTERS: United States importers of Japanese frozen tuna must continue to submit a "Letter of Assurance" to the Japanese Government, states a U. S. Embassy dispatch from Tokyo. However, a flexibility in wording now permitted will meet at least part of the objections raised by some importers to the statements in the Japanese Government form. The sample letter issued in October 1952 was merely intended as a guide in preparing "assurance" statements. "Assurance" statements will be acceptable if they are worded in accord with the intent of the requirement as stated in the form issued. The importers may specify time periods and kinds of tuna applicable to their "Letters of Assurance."

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, NOVEMBER 1952, PP. 38-9

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FROZEN TUNA EXPORTS TO U. S. INCREASE: Japanese exporters of frozen tuna are showing increased activity in procuring fish for shipment to the United States in accordance with existing limitations, reports a January 5 U. S. Embassy dispatch from Tokyo. As of December 17, 1952, 16,785 tons of the 18,000-ton quota have been authorized for export to the United States for the period April 1, 1952, to March 31, 1953.

The first landing of this winter's albacore (about 56,000 pounds) was made on November 25, 1952, at Yaizu, one of the leading tuna ports. Ex-vessel prices are reported high for top-quality fish for export. Early landings of albacore were sold at ex-vessel prices ranging from 260 to 400 yen per kan (6 to 9 U.S. cents per pound), with the higher-priced fish selected for export. On December 15, 1952, the highest price for albacore at Shieyama, a leading tuna port in northern Japan, was 470 yen per kan (11 U.S. cents per pound).

At the end of November, exporters were reportedly offering albacore at US\$315 to US\$325 per metric ton, f.o.b. Japan, with the hope that the price would rise to US\$335 per ton as the remainder of the export quota on winter-caught tuna is filled.

As of mid-December, tuna stocks on hand for export were estimated at 300 metric tons, presumably mostly albacore.

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CANNED CRAB MEAT EXPORTS: Japanese exports of canned crab meat to all countries January through September 1952 amounted to 57,570 actual cases, according to the Japanese Fisheries Agency. Estimated exports for October-December 1952 were 25,000 actual cases, making an approximate total of 82,570 actual cases for the year 1952. Of this amount, an estimated 70 percent, or 57,000 actual cases, were exported to the United States. Cases consist of 48 No. 2 cans (6½ oz. per can); however, included are a few cases with 96 No. 2 cans (6½ oz. per can) and 48 No. 3 cans (3½ oz. per can).

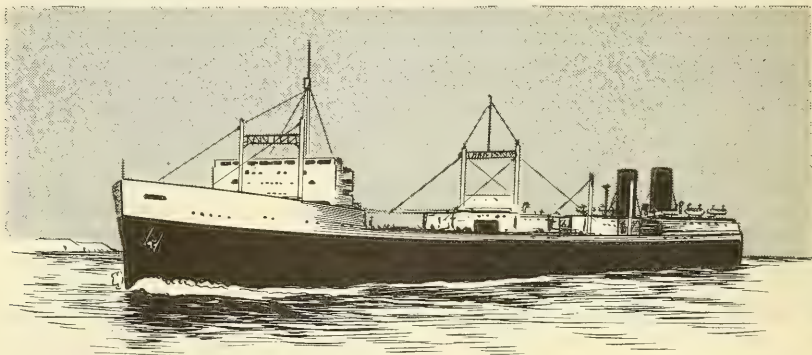
The Japanese canned crab meat pack in 1951 amounted to 192,871 actual cases. Of this amount, 103,187 actual cases, or 53.5 percent, were exported. Of the amount exported, 93,900 cases were shipped to the United States, 3,096 cases to Hawaii, 3,096 cases to European countries, and 3,095 cases to other countries (including the Far East).

Although the Japanese Government has issued no official statement on final plans for the 1953 factoryship crab-fishing operation in the Bering Sea, news accounts have recently reported that it will consist of one mothership (5,000 to

6,000 gross tons) with 20 catcher boats. The period of operation will be April to August in Bristol Bay, reports a January 21 U. S. Embassy dispatch from Tokyo. Production for this expedition is estimated at 50,000 cases (48 6½-oz. cans) of canned crab meat.

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WHALING EXPEDITIONS DEPART FOR ANTARCTIC: Two Japanese Antarctic whaling expeditions for the 1952/53 season sailed from Japan in the late fall, states a December 23 U. S. consular dispatch from Kobe. The first, a fleet of 24 vessels with Nisshin Maru (17,600 gross tons) as mothership, left Yokosuka late in November. A slightly smaller fleet composed of 21 vessels departed from Japan in several sections which are to reunite in the Antarctic, where it will be headed by



TONAN MARU, MOTHERSHIP ON JAPANESE ANTARCTIC WHALING EXPEDITION, 1952/53.

the mothership Tonan Maru (19,600 gross tons). This fleet includes 11 catcher boats, 3 trawlers, 1 whale-spotting boat, 1 tanker, and 4 refrigeration ships. The Tonan Maru departed Osaka December 1, and the other vessels in the fleet departed between the middle of November and December 9.

City banks have supplied ¥2.5 billion (US\$6.9 million) to support the two whaling expeditions, ¥1.2 billion (US\$3.3 million) to the Tonan Maru expedition and the remainder to the Nisshin Maru expedition. The loans are guaranteed in a sense by the decision of the Japanese Government to buy whale oil worth ¥2.5 billion (US\$6.9 million), provision for which is expected to be made in the current supplementary budget.

A goal of 1,748 blue whales has been set for the two fleets--200 more than in the previous season, but only 90 sperm whales as compared to 961 in 1951/52. This reduction in the goal for sperm whales is due to the low demand and large stocks on hand of sperm whale oil. The Tonan Maru share of this goal is 40 sperm and 848 blue whales, the remainder is for the other expedition.

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SOVIET UNION WILLING TO PERMIT JAPANESE FISHING OFF KAMCHATKA: If the Japanese Government formally requested it, an official of a Soviet Mission in Tokyo recently declared that Russia would permit Japanese fishing operations in the open

sea off Kamchatka as in prewar days. This information is attributed to several well-informed sources and was reported by the Japanese press (Kyodo, January 9).

In prewar days Japan engaged in highly productive salmon and crab fishing in the general area of Kamchatka. The 1952 Japanese salmon expedition operated in the waters considerably farther off the Kamchatka coast than the location of prewar operations. There have been reports from time to time that Japanese fishing interests would like to move in closer.

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PRIVATE FIRM SIGNS FISHING AGREEMENT WITH TWO COMMUNIST-CHINESE FIRMS: A Tokyo firm is reported to have concluded a private fishing agreement with two Communist-Chinese companies to trawl for fish in Chinese territorial waters, stated a December 16 dispatch from the U. S. Embassy in Tokyo. The area to be fished includes the Gulf of Chihli, the Yellow Sea, and East China Sea. It is understood that the agreement calls for the use of 10 trawlers (average 50 gross tons each) with all necessary personnel, vessels, equipment, and supplies provided by the Japanese company. The catch will be landed in Tientsin and Tsingtao in Communist China, and Shimonoseki, Nagasaki, and Hakata in Japan.

The agreement also provides for: (a) a guaranty of safety to the Japanese vessels and crews by Red China (it is reported that the Chinese companies will deposit US\$158,000 in a Hong Kong bank as security on this guaranty); (b) division of the proceeds of sale of the catch would be 87 percent to Japanese ship-owners, 5 percent to the Japanese trading firm, and 8 percent to the Chinese interests.

The Japanese fishing vessels are subject to Government licensing regulations that permit fishing only in specified areas, which at present do not include Communist-Chinese territorial waters. No official statement has been made by the Japanese Government regarding the venture.

There is much interest and speculation in many circles in Japan regarding the outcome of this business agreement between an agency of Communist China and private Japanese business interests.

JAPANESE GOVERNMENT



Mexico

CUBAN AND U. S. VESSELS ACCUSED OF STEALING CAMPECHE SOUND SHRIMP: A front-page story in the Mexican newspaper Excelsior (February 10) accused United States and Cuban vessels of stealing shrimp in Campeche Sound. The article (under the headline "300 Cuban and American Pirate Boats Stealing Shrimp in Campeche Sound") says that the National Chamber of Fishing Industry "denounced yesterday the sacking of our shrimp wealth by 300 pirate boats of Cuban nationality, and especially North American, and that the boats are lying as near as 1,000 meters from the wharfs at Ceiba Beach about 30 kilometers north of Campeche and are fishing in Mexican territorial waters."

Indications point to the possibility that this denunciation by Mexican shrimp interests will be used as an excuse for a raid on American shrimp boats and their detention by the Mexican authorities.

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GUAYMAS SHRIMP FISHERY CONTINUES TO DECLINE: The Guaymas shrimp fishing industry continued its downward trend in December 1952 when only 275 metric tons were landed at that port, states a January 16 U. S. consular dispatch from Guaymas. This is an average catch of less than one metric ton per vessel for the month. Shrimp shipments during the last three months of 1952 amounted to 1,029 metric tons (within 50 to 60 tons of amount landed). Roughly twice that amount was shipped during the same three months of 1951.

A diminishing number of shrimp operators believe that this trend is only temporary and the lack of shrimp in local waters is due to a cycle disappearance. However, most operators believe that the decline is due to the lack of conservation measures.

A group of prominent Guaymas shrimp operators flew to Mexico City early in December to interview the newly appointed Minister of Marine. The group returned



ONE OF THE LATEST MEXICAN SHRIMP TRAWLERS.

somewhat heartened by promises of new restrictions on bay shrimping, including removal of the "tapos" or barriers erected by canoe fishing interests at the mouths of bays, reserving for their exclusive use those waters where the shrimp develop. At the same time the Minister was reported to have tentatively approved a plan to prohibit bay fishing of any sort until October 1, 1954.

The operators also asked that a moratorium be granted on the 5-million-peso (US\$578,000) loan made to the shrimp interests in 1952 by the Financiera Nacional. They were promised the request would be

taken under advisement; but the outlook is said to be unfavorable.

Though these measures might moderate the downward trend, it is believed any beneficial effects deriving therefrom will be felt too late to save many of the more marginal operators from dissolution. Should the moratorium not be granted, it would appear that attachment proceedings would soon follow in the cases of the more heavily indebted boat owners.

It is reported that the population of Guaymas is decreasing for the first time since shrimp became the community's chief industry.

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SINALOA SHRIMP INDUSTRY TRENDS, OCTOBER-DECEMBER 1952: Shrimp exports to the United States from the province of Sinaloa, Mexico, during October-December 1952 were below those for the similar period of 1951, according to a U. S. consular dispatch of January 15 from Mazatlan (see table).

There is some difference of opinion as to the reason for the scarcity of shrimp off Sinaloa. Some blame it on the wasteful methods of trapping with weirs in Escuinapa: at the request of a committee of Sinaloa industrialists, the Ministry of the Navy agreed to have the weirs removed in May 1953. The results of the removal of these traps, if it takes place, will not be known until next season.

Sinaloa Shrimp Exports to U. S., October-December 1952		
Port	Oct.-Dec. 1952	Oct.-Dec. 1951
	Lbs.	Lbs.
Mazatlan	2,743,795	2,264,380
Topolobampo ..	1,814,770	2,724,750
Escuinapa	-	146,822
Total	4,558,565	5,135,952

Reports at the end of December indicated that good catches had been made in the Bay of Magdalena, Lower California.



Nicaragua

CONCESSION FROM GOVERNMENT REQUIRED FOR FOREIGN VESSELS FISHING IN NICARAGUAN TERRITORIAL WATERS: In order for foreign companies or vessels to enjoy free-entry privileges and to be able to fish in Nicaraguan territorial waters, it is necessary to obtain a concession from the Nicaraguan Government by means of a contract. This procedure will be necessary until laws projected by the Executive Power are approved by the Nicaraguan Congress. Although there are several laws now in effect which cover various phases of foreign investment in Nicaragua for agricultural or industrial production, use of international exchange, and special exemptions for foreign investors or companies, none seems to apply to fishing or fishery enterprises.

A law entitled "General Law on Concessions for the Exploitation of Natural Resources" is now before the Nicaraguan Congress to cover foreign investors and permit the free disposition by the investor of 50 percent of the foreign exchange derived for all exports, states a December 22 dispatch from the U. S. Embassy at Managua.



Norway

WINTER HERRING FISHERY: Using electronic instruments to spot herring schools, scientists aboard the Norwegian research vessel G. O. Sars, were at sea early in January to meet the annual mature winter herring spawning run off the Norwegian coast, according to a January 8 release from the Norwegian Information Service. When the run starts in earnest, the commercial herring fleet will be directed to the points of maximum concentration by short-wave radio. Just when the herring will arrive is always difficult to ascertain, but a noted Norwegian fisheries consultant has made accurate predictions as to time and place for several seasons in a row, and believes the main influx should reach waters southwest of Aalesund on or about January 15.

Hundreds of fishing vessels along the western province of Møre are all geared for the start of the winter herring fishery. In 1953 it is expected that at least 25,000 fishermen will participate, and the fleet will be larger than ever before.

This year the transportation of herring to oil-and-meal reduction plants located north and south of the fishing banks has been cooperatively organized, which should speed deliveries. The daily capacity of the fish-meal plants is about 29,000 metric tons of raw herring--an increase of 4,500 tons above 1951.

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FISH CONSUMPTION, 1952: The per-capita consumption of fishery products in Norway during 1952 was estimated at 48 kilos (106 pounds), states a November 17 U. S. consular dispatch from Oslo. Consumption, which has remained fairly constant each year since 1947, is above the prewar average. Although the annual catch of fishery products has doubled since 1946, there has been no sizable increase in consumption due to the transportation problem: production of high quality fish is greatest on the west coast of Norway while the greater portion of the population is located in eastern and southern Norway.

The large fish consumption offsets the deficit of meat and other animal protein in the Norwegian diet.



Pakistan

FISHERY HARBOR PLANNED FOR KARACHI: A fishery harbor, to include a wholesale market and ice and cold-storage facilities, is planned for Karachi. Construction will commence April 1953, according to a press report in Karachi newspapers. This harbor will take two years to complete and will be the first of its kind in the country.

Blueprints for the fishery harbor were prepared by two United Nations Food and Agriculture Organization experts in early 1951 after they had studied the area around Karachi harbor. Plans for the harbor were submitted after consultations with Pakistan fishery experts about March 1952.

The plan envisages the establishment of a fishing center in West Pakistan. It will include a wholesale fish market where the fishermen operating in Karachi waters can sell their catch. It will also have a cold-storage unit of 15-metric-tons-per-day capacity where fish can be stored at reasonable rates. An ice plant also will be included.

An interesting feature of the harbor will be provisions for the comfort of the fishermen. There will be a good rest house where the fishermen can stay.

The harbor itself will extend over an area of 40 acres. It will have the capacity to handle 350 fishing craft of an average length of 45 feet. The first year handling capacity of the harbor will be 15,000 metric tons, to be later increased to 30,000 metric tons. The harbor will also have a workshop for repair of fishing craft and fishing equipment. The railway line at present is only 500 yards from the proposed site for the fishing harbor, but in the future the harbor may be connected by rail with the rest of West Pakistan.

The fishery harbor will have a direct outlet to the sea apart from the present shipping lane through the port of Karachi. Thus, the fishing craft plying from harbor to open seas would not interfere with the normal traffic of the Karachi seaport.



Panama

NEW BAIT-FISHING REGULATIONS ANNOUNCED: New bait-fishing regulations in Panamanian jurisdictional waters of the Pacific Ocean were announced by the Panamanian Government in Decree No. 30 of December 22, 1952. Increasing Panamanian Government revenues, eradicating the illegal practices that have hitherto existed, and increasing the volume of business which Panamanians secure from tuna boats were the objectives for the changes incorporated in the new regulations, according to a January 2 dispatch from the U. S. Embassy in Panama. Article 15 of the new decree (which appeared in Gaceta Oficial, No. 11,964, December 30, 1952) annuls previous decrees (Nos. 215 and 216 of October 27, 1951; 324 of May 28, 1952; and 330 of June 7, 1952) dealing with bait fishing.

A number of significant changes are incorporated in the new Decree.

Henceforth, and presumably until the National Assembly enacts an organic law on the subject which is here envisaged, the price of a license to a tuna boat will be calculated on the basis of B/. 15 (US\$15) for each ton of the boat's net weight. Previously, in Decrees 330 of June 7, 1952, and 216 of October 27, 1951, the price was based on a flat fee depending upon the weight category of the boat. The following table shows the cost of licenses under the new decree as compared to the preceding one:

PANAMANIAN SCALE OF LICENSE FEES FOR BAIT-FISHING VESSELS		
Weight of Vessel	Fee Under Decree No. 330 June 7, 1952	Fee Under Decree No. 30 Dec. 22, 1952 ¹
	US\$	US\$
Under 25	{ 100	up to 375
Over 25 and up to 50 ...		390 to 750
Over 50 and up to 100 ..		765 to 1,500
Over 100 and up to 150 ..		1,515 to 2,250
Over 150 and up to 200 ..	800	2,265 to 3,000
Over 200	1,000	3,015 and up
	1,200 and up	
¹ /CALCULATED ON BASIS OF A BOAT'S NET TONNAGE MULTIPLIED BY B/. 15 (US\$15).		

Licenses must be secured through "the services of Agencies legally established in the Republic of Panama."

Licenses must be paid for by means of a check drawn in favor of the Panamanian National Treasury. Licenses will be issued by the Ministry of Agriculture, Commerce, and Industries.

Licenses are to be signed by the Minister of Agriculture, Commerce, and Industries and by the Secretary of Commerce or by the latter only when he has written authority from the Minister to that effect.

The new decree changes the period for which the licenses are valid. Under the previous decree (No. 330) they were valid for one year from the date issued. Under Article 4 of the new decree, however, they shall "cover the fishing season of each year on whatever date the vessel applies for the license." A transitory provision in Article 4 provides that vessels which purchased and paid for licenses in accordance with the terms of Article 2 of Decree 330 (which provided that said licenses would be valid for one full year from the date of purchase) will be permitted to fish during the 1953 season until the date on which their license expires.

This is interpreted to mean that all licenses purchased under this decree will be seasonal licenses which will expire at the end of the season of the year in question; and that a license for a given boat purchased during the last month of the season, for example, will cost the same as one for the entire season. This change presumably was inaugurated in order to encourage tuna boats to bait fish in Panamanian waters for the full season and to emphasize that short-term licenses (covering any part of the season) will not be sold.

The new decree (Article 3) also changes the bait-fishing season from February 1-September 30 of each year to February 15-October 15; and it deprives the Minister of Agriculture, Commerce, and Industries of the discretionary authority to permit fishing during the remainder of the year.

Article 5 of the new decree states that the application for bait fishing must be accompanied by "all receipts for deposits issued and the value of all bait permits issued to applicants (boat operators) during the last two years."

The new decree also requires that all boats receiving licenses in the future must purchase their fuel, make their repairs, and purchase their supplies and lubricants in Panama.

Also, the fishermen's cards, carried by the captain and crew members of tuna boats, must bear a national stamp costing US\$1.00. The Ministry of Agriculture, Commerce, and Industries is authorized by the decree to adopt all measures conducive to obtaining an efficient control and strict vigilance of bait-fishing activities envisaged by the decree.

Aside from the changes noted, the new decree is identical or closely similar in most respects to the previous decree (No. 330) regulating bait fishing. The more important similarities follow.

The legal bait-fishing area as described in the earlier Decree No. 330 remains unchanged. This area is defined in Article 1 as the jurisdictional waters of the Republic, within the limits of the continental shelf, Pacific littoral, situated south 8°30' N. and east 79°15' W. This is interpreted as including the area around Chepillo Island, the mouth of the Bayano River, the Pearl Islands, but excluding that area around Chame Point and the islands of Otoque, Bona, Taboga, and Taboguilla.

Article 6 of the new decree, concerning the killing and mutilating of any fish caught not appropriate for tuna bait or needed for the crew's food, and prohibiting the selling of fish within the Republic, remains the same as the similar article in earlier decrees.

The definition of what species shall comprise tuna bait, and end-of-the-season reports on types and quantities of fish caught, are included in Article 7 and are the same as in previous decrees.

The penalty for violations remains unchanged.

NOTE: FEES ARE LISTED IN BALBOAS WHICH ARE AT PAR WITH THE U. S. DOLLAR, I.E., 1 PANAMANIAN BALBOA EQUALS US\$1.

ALSO SEE COMMERCIAL FISHERIES REVIEW, VOL. 14, NO. 8 (AUGUST 1952), P. 43.



Republic of the Philippines

IMPORTS OF CANNED CALIFORNIA ANCHOVIES PERMITTED: Imports into the Philippines of anchovies labeled as sardine or packed sardine style were approved by the Import Control Commission on December 5. This product is now listed, as are canned sardines, as a decontrolled item. Although requiring licenses, decontrolled items may be imported without limitation as to volume and value.

This change was based on a recent ruling by the Philippine Board of Food Inspection. California canners and exporters are now permitted to ship canned an-

chovies packed sardine style to the Philippines labeled exactly that way or labeled "sardines," provided the word "anchovies" is shown on the label clearly, conspicuously, and adjacent to and qualifying the word "sardines." Previously the canned anchovies imported into the Philippines were considered a luxury since they were mostly the European pack (cured fillets in olive oil). Through its Import Control Commission, the Philippine Government had placed a tight control on imports of all canned anchovies. However, the canned anchovies packed sardine style in California are not considered a luxury pack and the recent Philippine ruling permits imports of California canned anchovies packed sardine style.

The California sardine fishery this season (August 1952-January 1953) was a complete failure. Taking advantage of the unprecedented catches of anchovies in the districts of San Francisco and Monterey, California cannerys packed substantial quantities of anchovies sardine style. The only market of any consequence for this type of product at this time is in the Philippines.



Tunisia

FISHERY PRODUCTS EXPORTS TO THE UNITED STATES, 1951-52: The following table shows Tunisian exports of fishery products to the United States for 1951 and 1952:

Tunisian Exports of Fishery Products to the United States, 1951-52				
Item	1 9 5 2		1 9 5 1	
	Weight Lbs.	Value US\$	Weight Lbs.	Value US\$
Sponges	6,900	36,216.15	14,500	88,213.40
Snails	124,000	29,807.79	120,500	23,050.00
Dried Octopus	5,000	2,250.00	2,600	1,310.00
Cuttlefish bone	54,500	13,017.00	42,000	7,166.00

NOTE: REPORTED BY A JANUARY 12 U. S. CONSULAR DISPATCH FROM TUNIS.



United Kingdom

ABERDEEN BANS LANDINGS BY ICELANDIC-OWNED FISHING VESSELS: In an agreement drawn up recently, the Aberdeen, Scotland, fishing industry placed a ban on the purchase of fish from Icelandic-owned vessels at that port and at the same time partially lifted the restrictions on German vessels, states the November 29 issue of The Fishing News, a British trade periodical. This action is the result of the Icelandic-British dispute that developed through the extension of Iceland's territorial waters for fishing. The agreement was the result of a joint meeting by the directors of the Aberdeen vessel owners, dealers, and fishermen.

The meeting adopted the following resolution: "(1) that the Aberdeen Fish-curers' and Merchants' Association will immediately instruct its members not to buy fish from any Icelandic-owned vessel that may land; (2) that an interim period of two weeks be allowed to permit the introduction of machinery to ensure supplies to the port and the consumer; (3) that in the two-week period following, the restrictions on ice from German vessels shall be lifted to permit one German vessel per week to discharge, sell its fish, and be iced at the port; (4) if on December 29 a long-term policy has not been ratified, measures will be taken to adjust the supply position as necessary."

* * * * *

HEAVY STOCKS OF CANNED SILD SARDINES REPORTED: Difficulties in marketing the catches of sprat herring have marred the beginning of the season in the Firth of Forth, states the December 6 issue of The Fishing News, a British fishery periodical. Scottish canners have intimated that they cannot buy the raw fish because of very heavy stocks (canned or frozen raw fish) of sild sardines on hand.

Marketing difficulties for sprats are attributed to the collapse of the Australian market, to which Scottish sild canners were sending tremendous quantities. A further blow has been the loss of the British home market to the Dutch who auctioned off imported Norwegian canned sild sardines to the British Ministry of Food. British canners claim that the prices at which the imported Norwegian canned sild are being offered are well below cost and purchase prices.

According to one canning firm, some 8,000,000 cans of canned sild sardines remain unsold from last season, plus some 500 tons of frozen sprats awaiting canning. This position is duplicated by other firms in the trade, according to reports. Estimates place imported Norwegian canned sild sardine stocks at 25,000,000 cans, now being cleared at around 7d. (8 U.S. cents) per can by the British Ministry of Food. British canned sild sardines retail at 1s. (14 U.S. cents) per can so that in effect the Ministry is subsidizing imports, according to the canners.

Meantime sprat herring fishermen are getting 20s. (US\$2.80) per cran¹/ for their fish for animal-food production. It was reported that fishermen stopped fishing early in December to wait for the New Year season when various types of herring are in demand.

¹/ONE CRAN IS A MEASURE EQUAL TO 45 U. S. GALLONS.

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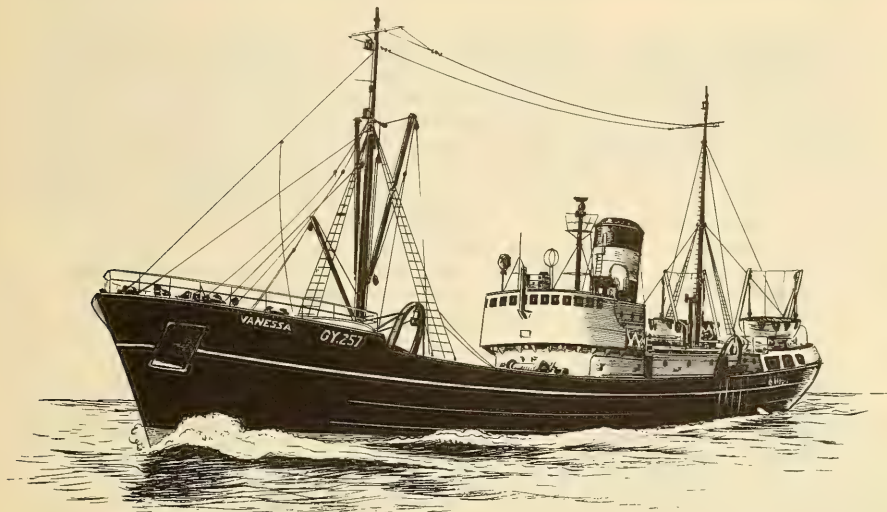
MODERN TRAWLER LAUNCHED AT GRIMSBY: The trawler Vanessa, called the most modern of fishing vessels, sailed from Grimsby in December with all the aids to navigation, fishing, and for the comfort of the crew, according to the December 1952 Fishing Industry, a London trade magazine. Built at Beverley, the Vanessa has the best navigational aids obtainable, with radio of world-wide range, directional radio, radar, echo-sounders, a fish finder, etc. Also everything possible has been included to make the Vanessa a pleasant vessel for the crew even to providing music on deck while the men work.

Dimensions of the new trawler are: length 181.40 feet, breadth 31.10 feet, depth 15.20 feet; I.H.P. 1,100; B.H.P. 930. On trials it achieved a speed of 13.4 knots light and just under 13 knots loaded. The main motor is standard triple expansion. It is fitted with feed and bilge pumps operated from levers on the engine. The circulating pump is of the centrifugal type, direct driven by motor. Oil-fired, the marine-type Scotch boiler has a working pressure of 225 lb. p.s.i.

The trawl winch is of the Triton type, and has a capacity on each barrel of 1,000 fathoms of 3-in. warp.

Communication between the various parts of the ship is under cover wherever possible, and there is covered access between the bridge and the extreme aft of the vessel. Verbal communication is by means of loudspeakers fitted throughout the trawler, so that the Captain on the bridge can speak to anyone anywhere on the vessel. Similarly, hand microphones installed in vital parts of the vessel enable crew members to reply without a journey up to the bridge. In case the telemotor should break down, auxiliary hand-steering gear is installed right aft below decks, and the unsighted helmsman receives orders relayed electrically from the bridge.

The Vanessa has accommodation for a crew of 28, situated aft. Forward are three big holds, one fitted out for stores and wire-splicing apparatus, while



THE NEW MODERN BRITISH TRAWLER VANESSA EQUIPPED WITH THE LATEST NAVIGATION AND FISHING AIDS, AND MUSIC FOR THE FISHERMEN AT WORK.

trawls are prepared for use and nets are repaired completely under cover in the other two holds.

The cofferdam has been adapted into two tanks, one to take immature fish for reduction and one to hold offal. Livers from the gutted fish are pumped direct from the deck to the liver boiler below the aft end, no intermediate handling being required. The kits of livers are fed into the hopper and container placed just forward of the winch. When the hopper is filled, steam is applied and the livers are blown through pipes into a collecting tank by steam pressure, and are then fed into the "Egg-Timer"-type liver boiler. Patent fishroom hatch-covers and a fish-washing machine on the deck are notable features.



Venezuela

CONTINENTAL SHELF MAY BE CLAIMED AS WITHIN TERRITORIAL LIMITS: The new Venezuelan Constitution being drafted will include some reference to the Continental Shelf in its definition of territorial limits, according to Venezuelan press reports. A Venezuelan writer and economist has suggested that Venezuela claim sovereignty over the territorial waters and the submarine subsoil as far north as Bird Island, a Venezuelan possession in the Carribean Sea some 300 miles from the Venezuelan coast line.

The El Heraldo on January 21 quoted an Article which it understood was to be included in the new Constitution as a definition of Venezuelan territorial limits, a January 26 dispatch from the U. S. Embassy at Caracas states. The Article reads as follows:

"Article 8 of Title 1. The territory of the United States of Venezuela is that area which, immediately prior to the political transformation of 1810, corresponded to the captaincy of Venezuela, as modified by subsequent treaties, and which comprises as well those islands which may form, or which may appear within, the territorial waters. Furthermore, those beds of the sea and the subsoil of the submarine zones adjacent to the Continental Shelf and insular territory of the Republic, which constitute that part of the Continental Shelf appending to Venezuela, are hereby declared subject to the sovereignty and jurisdiction of the Republic. Those extensions of the territorial water and of the contiguous maritime zone and of the aerial space above, in which the State exercises vigilance, are hereby to be determined by law. This territory may, neither as a whole nor in part, be leased, ceded, nor alienated in any form, not even for a limited time, to any foreign country or to any persons whatsoever claiming to have rights to those zones."

* * * * *

PEARL FISHING SEASON BEGINS WITH MARKET UNCERTAIN: Approximately 200 well-equipped boats commenced oyster-pearl fishing January 1 off the Island of Margarita, as the 1953 season got underway. The season will close in April. It is still uncertain whether a market will be found for the pearls or whether they will join the harvests of previous years in the vaults of the Banco Agricola y Pecuario. Pearl fishing in Venezuela is supervised by the Ministry of Agriculture through its Nueva Esparta office, according to a January 28 U. S. consular dispatch from Caracas.



Zanzibar Island

REVIEW OF THE FISHERIES, 1951: The estimated total catch of fish on Zanzibar Island during 1951 was 4,208,000 pounds, valued at £126,000 (US\$354,000), states a December 3 U. S. consular dispatch from Mombasa, Kenya. No information is available on the catch by species. These figures include unrecorded landings at the smaller beaches. The quantities of fish landed at ten main fishing centers in Zanzibar Island was determined by fishery guards who met all fishing boats as they arrived and recorded data regarding the catch. A census was also taken of all fishermen and their craft.

Landings during any single month never fall below 14 percent of the monthly average. A regular supply of fish is thus available for the Zanzibar market. The catch is greatest in March. During the month, the prevailing wind changes from the northeast to the southwest; and the sea is fairly calm since light breezes prevail during the transition. In April, May, and November wet and stormy weather reduces the size of the catch.

The census of fishermen revealed that approximately 1 man in 8 is a fisherman by occupation. A total of 4,975 men and 1,461 fishing craft are employed in the industry. The average catch per man per year is approximately 850 pounds and the average fisherman earns £25 (US\$70) a year. This low income is insufficient to keep a family and necessitates work in other fields.

A total of 1,461 boats are used for fishing (969 outrigger dugout canoes, 324 dugout canoes without outriggers, 129 small dhows, and 39 dinghies). The average crew is 3 men per craft, although the dhows require more men and many dugout canoes are operated by one man.

Consumption of fish in Zanzibar was approximately 1 pound for each 13 head of population a day during 1951. The Fisheries Officer of Zanzibar considers this a high figure and said that, "it indicates the extent to which the Zanzibaris looked to the sea for their protein food." He asserted that more fish would be consumed if it were more plentiful and cheaper, and urged that the industry be provided with better boats, of which some should be powered, and with better fishing gear.

NOTE: PEMBA ISLAND IS NOT INCLUDED.

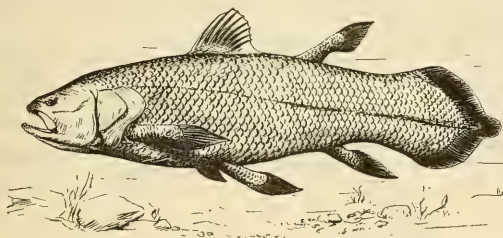


"EXTINCT" FISH SPECIES REDISCOVERED OFF AFRICAN COAST

The Coelacanth, a fish believed to be extinct for over 60 million years, reappeared very much alive for the second time in modern history off the African coast, according to recent press reports. It is claimed to be the closest surviving relative to the ancient creatures that linked

water and land animals.

On December 20, 1952, a fisherman on a small island in the Comores Archipelago (between Madagascar and Africa), using line and ordinary bait in moderately deep water over rocky bottom about 200 yards from shore, hooked a large fish of a type he had never seen. Steel-blue scales, surfaced with an enamel-like substance, covered the 5-foot 100-pound



A COELACANTH, A FISH BELIEVED TO BE EXTINCT FOR OVER 60 MILLION YEARS, WAS CAUGHT OFF SOUTHEAST AFRICA IN DECEMBER 1952.

fish. The fisherman took the fish to market and would have disposed of it in the usual way had not another fisherman remembered an old pamphlet distributed years previous by a South African ichthyologist, Dr. J. L. B. Smith, offering a £100 (US\$280) reward for such a specimen. Dr. Smith had distributed his pamphlet when a previous Coelacanth specimen had been captured in 1938 off East London, South Africa, but unfortunately all the internal organs had rotted.

This recent discovery was hailed throughout the world as one of the greatest palaeontological events of the century. It was believed that these fish declined in number and by 100 million years ago not many remained. Fossil records indicated 70-60 million years ago the Coelacanthidae had all perished. Therefore, it was a great shock for the biological world when the 1939 and 1952 discoveries produced a live true Coelacanth almost bone for bone and fibre for fibre identical with those 300-70 million years ago.



FEDERAL ACTIONS



Executive Orders

DEFENSE PRODUCTION ADMINISTRATION TERMINATED: The President on February 4 issued an Executive Order which terminated the Defense Production Administration as a separate agency and transferred its functions to the Office of Defense Mobilization.

* * * * *

SUSPENSION OF WAGE AND SALARY CONTROLS: Wage and salary controls under the Defense Production Act of 1950 (as amended) were suspended by Executive Order 10434, issued February 6, 1953. The full text of the order follows:

WHEREAS the production of materials and services and the demand therefor in the national economy are approaching a practicable balance; and

WHEREAS the earliest possible return to freedom of collective bargaining in the determination of wages will serve to strengthen the national economy and thereby the national security; and

WHEREAS the stabilization of wages, salaries, and other compensation is not now necessary to carry out the purposes of the Defense Production Act; and

WHEREAS, in view of the foregoing, it is appropriate to permit adjustments of wages, salaries, and other compensation arrived at through the processes of free

collective bargaining or other voluntary action to become effective:

NOW, THEREFORE, by virtue of the authority vested in me by the Constitution and statutes, including the Defense Production Act of 1950, as amended, and as President of the United States, it is hereby ordered as follows:

1. All regulations and orders issued pursuant to the Defense Production Act of 1950, as amended, stabilizing wages, salaries, and other compensation, are hereby suspended.

2. The wage, salary, and other compensation adjustments proposed in petitions pending before wage and salary control agencies may now be placed in

effect without the approval of such agencies. To the extent that agreements involved in such petitions are conditioned upon approval under Title IV of the Defense Production Act, this order shall be deemed such approval, but such approval shall be subject to paragraph 3 hereof.

3. This order shall not operate to defeat any suit, action, prosecution, or administrative enforcement proceeding, whether heretofore or hereafter commenced, with respect to any right, liability, or offense possessed, incurred, or committed, prior to this date.

DWIGHT D EISENHOWER

THE WHITE HOUSE,
February 6, 1953.



Department of Commerce

NATIONAL PRODUCTION AUTHORITY

OPEN-ENDING OF CONTROLLED MATERIALS PLAN: A procedure by which controlled materials producers may accept unrated orders for controlled materials after the commencement of lead time is established by Direction 20 to CMP Regulation 1. Effective February 16, 1953, the National Production Authority by this Direction also explains how persons may obtain and use controlled materials without charging allotment authority.

At the same time NPA issued Direction 10 to CMP Regulation 6 which establishes a procedure by which persons engaged in construction projects may commence or continue construction of their construction projects, and obtain controlled materials after the commencement of lead time and use the same, without charging allotment authority.

These orders followed an announcement by NPA on February 13 that: "Controlled Materials Plan to carry through until June 30. Open-ending to be made effective im-

mediately. No more CMP tickets will be issued to take up any space reservations. Controlled Material Producers must honor all outstanding CMP tickets, including those not yet placed before unrated orders can be accepted..."

Manufacturers of Class B products have been notified not to file CMP-4B applications for controlled materials for the third quarter of 1953 and not to submit applications for supplemental allotments for the second quarter of the year, except for defense requirements.

For details see: Direction 20 (Ex-allotment acquisition and use of controlled materials sold after commencement of lead time) to CMP Reg. 1 (Basic Rules of the Controlled Materials Plan) and Direction 10 (Ex-allotment acquisition and use of controlled materials sold after commencement of lead time) to CMP Reg. 6 (Construction), both dated Feb. 16, 1953; and news releases NPA-2904 dated Feb. 13, 1953, and NPA-2905, dated Feb. 16, 1953

* * * * *

CAN ORDER M-25 REVOKED: With the revocation of five orders and the amendment of a regulation, the National Production Authority on February 6 removed all controls over uses and inventories of tin. NPA retained only the requirement that monthly reports on Form NPAF-7 be submitted by consumers and dealers on tin stocks receipts, shipments, and consumption.

Orders revoked were: M-25 (Cans), M-8 (Tin), M-24 (Tin Plate and Terneplate), M-26 (Closures), and M-27 (Collapsible Tubes). This action will permit canners to use cans without regard to tin-coating specifications. In December 1952, NPA had removed all quota restrictions on the use of cans. In revoking these orders NPA announced that "the supply of tin contracted for and otherwise obtainable in world markets for use in this country now is sufficient to balance against demands, both Government and civilian. Revocation of NPA controls is not expected to interfere with the early achievements of the strategic stockpile objectives. Revocation of M-25 (Cans) represents an expression of confidence on the part of the Government that the can industries' cooperation will be continued in an effort to achieve the objective of the tin conservation goal."

NPA simultaneously amended NPA Reg. 1 by removing tin and tin products from inventory control.

For details see: M-8 (Tin) Revocation, M-24 (Tin Plate and Terneplate) Revocation, M-25 (Cans) Revocation, M-26 (Packaging Closures) Revocation, M-27 (Collapsible Tubes) Revocation, NPA Reg. 1 (Inventory Control) as amended, and news release NPA-2892--all dated Feb. 6, 1953.

NOTE: FULL TEXTS OF MATERIALS ORDERS MAY BE OBTAINED FROM NATIONAL PRODUCTION AUTHORITY, WASHINGTON 25, D. C., OR FROM ANY DEPARTMENT OF COMMERCE REGIONAL OR FIELD OFFICE.



Office of Defense Mobilization

CONTROLLED MATERIALS PLAN MODIFIED: Effective immediately the Controlled Materials Plan has been modified so that producers of steel, copper, and aluminum may, after they have honored CMP tickets, use additional space in their plants for any customer without further reference to the Government, the Office of Defense Mobilization announced on February 13.

Up to now, as additional mill space developed, customers had to apply to the Government for supplemental allotments. To permit an orderly withdrawal from CMP, all controlled material allotments for the second quarter will remain valid through June 30.

At the same time studies are now being made by ODM regarding materials control which will be required after June 30, in accordance with the President's statement in his State of the Union Message when he said:

"I believe also that material and product controls should be ended, except with respect to defense priorities and scarce and critical items essential for our defense. I shall recommend to the Congress that legislation be enacted to continue authority for such remaining controls of this type as will be necessary after expiration of the existing statute on June 30, 1953."

1. This latest ODM action applies only to materials controls and allotments and will not effect the present price controls on steel, copper, and aluminum.

2. The system of production directives for steel, copper, and aluminum, establishing production tonnages by agreement between individual mills and the National Production Authority, will be continued through June 30.

The orderly withdrawal from CMP will assure uninterrupted production for national defense and at the same time protect the interests of civilian producers, particularly small users. The least disruption to mill schedules, which have been set through June 30, will result by this action.

In line with this action, the National Production Authority instructed all manufacturers of Class B products--namely, those for which NPA allots materials--that it will not be necessary for them to file applications for controlled materials for the third quarter of 1953. Requests for additional second quarter materials to manufacture Class B products for the Defense Department and the Atomic Energy Commission will be handled as before by NPA industry divisions.



Economic Stabilization Agency

OFFICE OF PRICE STABILIZATION

EDIBLE FISHERY PRODUCTS DECONTROLLED: Price controls on all edible fish were revoked effective February 6, including Maine sardines, canned salmon, and flat lake salt herring, but excepting processed cod sold outside the Continental United States. This action was included in a February 6 announcement of the Director of Price Stabilization which completely removed price controls on all meats, restaurant meals, and other items.

The February 6 decontrol actions were the first orders issued under the President's instructions that OPS eliminate controls in an orderly manner between now and April 30, when the legal authority to maintain ceilings expires. The actions announced were effective immediately upon issuance.

While the actions revoke the regulations in their entirety, OPS emphasized that the records relating to past transactions which were kept under the regulations must be retained by the affected parties. However, records of future transactions need not be kept.

The meat, fish, and restaurant decontrol action is taken by Amendment 19 to General Overriding Regulation 7, Revision 1, the general OPS regulation which covers suspension and exemption of foods from price control. The amendment revokes all regulations effective in Continental United States pertaining to live-stock and meats; the two restaurant ceiling price regulations (CPR 11 and CPR134); and the regulations applying to fish: CPR 65 for canned salmon, CPR 85 for Maine sardines, and CPR 109 for flat lake salt herring.

For details see: Amdt. 19 (Livestock, Meats, Fish, Restaurants and Distribution Regulations) dated Feb. 6, 1953, to Revision 1 of General Overriding Regulation 7 (Exemptions and Suspensions of Certain Food and Restaurant Commodities; and news release OPS-0-1373 dated Feb. 6, 1953.

NOTE: FULL TEXTS OF PRICE ORDERS MAY BE OBTAINED FROM THE OFFICE OF PRICE STABILIZATION, WASHINGTON 25, D. C., OR FROM THE REGIONAL OPS OFFICE IN YOUR AREA.



Department of the Treasury

BUREAU OF CUSTOMS

GROUND FISH FILLET IMPORT TARIFF-RATE QUOTA FOR 1953: The reduced-tariff-rate import quota on fresh and frozen groundfish (cod, haddock, hake, pollock, cusk, and ocean perch) fillets for calendar year 1953 is 33,866,287 pounds, the Bureau of Customs announced on January 21, 1953. This announcement appeared in the Federal Register of January 24. Divided into quarterly quotas, this means that 8,466,572 pounds of groundfish fillets may be imported during each quarter at the 1-7/8 cents-per-pound rate of duty. During each quarter, groundfish fillet imports over the quarterly quota will be dutiable at the rate of 2½ cents per pound.

The reduced-rate import quota for 1953 is 8 percent higher than the 1952 quota of 31,472,108 pounds and 16 percent above the quota of 29,239,808 pounds established in 1951.

Average aggregate apparent annual consumption in the United States of fresh or frozen groundfish fillets and steaks in the three years preceding 1953 was 225,775,244 pounds, calculated in accordance with the proviso to item 717 (b) of Part I, Schedule XX, of the General Agreement on Tariffs and Trade (T. D. 51802). The proviso states that the import quota for any current calendar year shall be 15,000,000 pounds or 15 percent of the average aggregate apparent annual consumption in the three years preceding the current year, whichever is greater. The tariff item in summarized form is: "Fish, fresh or frozen (whether or not packed in ice), filleted, skinned, boned, sliced, or divided into portions, not specially provided for: Cod, haddock, hake, pollock, cusk, and rosefish."

The full text of the announcement as it appeared in the Federal Register follows:

The tariff-rate quota for the calendar year 1953 on certain fish dutiable under paragraph 717 (b), Tariff Act of 1930, as modified pursuant to the General Agreement on Tariffs and Trade (T. D. 51802).

In accordance with the proviso to item 717 (b) of Part I, Schedule XX, of the General Agreement on Tariffs and Trade (T. D. 51802), it has been ascertained

that the average aggregate apparent annual consumption in the United States of fish, fresh or frozen (whether or not packed in ice), filleted, skinned, boned, sliced, or divided into portions, not specially provided for: Cod, haddock, hake, pollock, cusk, and rosefish, in the three years preceding 1953, calculated in the manner provided for in the cited

agreement was 225,775,244 pounds. The quantity of such fish that may be imported for consumption during the calendar year 1953 at the reduced rate of duty established pursuant to that agreement is, therefore, 33,866,287 pounds. (343.3)

[SEAL]

C. A. EMERICK,
Acting Commissioner of Customs.



Eighty-Third Congress (First Session)

JANUARY 1953

The First Session of the Eighty-Third Congress commenced on January 3, 1953. Listed below are public bills and resolutions introduced and referred to committees or passed by the Eighty-Third Congress (First Session) and signed by the President that affect directly or indirectly the fisheries and allied industries. Public bills and resolutions are shown in this section only when introduced and, if passed, when signed by the President; but also shown are the more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month.

BILLS AND RESOLUTIONS INTRODUCED:

Alaska Statehood: S. 50 (Murray, for himself and 14 other Senators) - A bill to provide for the admission of Alaska into the Union; to the Committee on Interior and Insular Affairs.

(Regarding fisheries, the bill provides that all real and personal property of the United States situated in the Territory of Alaska which is specifically used for the sole purpose of conservation and protection of the fisheries of Alaska, under the provisions of the Alaska commercial fisheries laws, shall be transferred to the State of Alaska by the appropriate Federal agency. Further, it provides that such transfer shall not include lands withdrawn or otherwise set apart in connection with general research activities relating to fisheries. The rights of the State of Alaska over fisheries shall not be construed to include control over fur seals, sea otters, and such other fish resources as are protected under the provisions of international agreements.)

Also: H. R. 20 (Mack of Washington)...
H. R. 207 (Angell)...
H. R. 1746 (Yorty)...

Chemical Additives in Foods: H. R. 2245 (Delaney) - A bill to amend the Federal Food, Drug, and Cosmetic Act by providing for the regulation of chemical additives in foods; to the Committee on Interstate and Foreign Commerce.

Continental Shelf Submerged Lands: H. R. 1931 (Hosmer) - A bill to set aside Executive Order No. 10426 relating to submerged lands of the Continental Shelf; to the Committee on the Judiciary.

Elimination of Salmon Traps in Alaska Waters: H. R. 984 (Bartlett) - A bill to provide for the gradual elimination of salmon traps in the waters of Alaska over a period of 5 years. After January 1, 1959, it would be unlawful to operate any salmon traps or to take salmon by means of such a trap in Alaska; to the Committee on Merchant Marine and Fisheries.

Fats and Oils Imports and Exports: H. R. 147 (Martin of Iowa) - A bill to provide aid in stabilizing agriculture prices by providing an equalizing fee on imported fats and oils, an offset on exports of fats and oils, and for other purposes; to the Committee on Ways and Means.

Fish Hatchery: H. R. 190 (Wickersham) - A bill to establish rearing ponds and a federal fish hatchery in western Oklahoma at a cost not to exceed \$250,000; to the Committee on Merchant Marine and Fisheries.

Hawaii Statehood: S. 49 (Cordon, for himself and 15 other Senators) - A bill to enable the people of Hawaii to form a constitution and State government and to be admitted into the Union on an equal footing with the original States; to the Committee on Interior and Insular Affairs.

Also: S. 51 (Murray, for himself and 14 other Senators)...

H. R. 21 (Mack of Washington)...
H. R. 49 (Farrington)...
H. R. 205 (Angell)...
H. R. 1746 (Yorty)...

Inflation Protection: H. J. Res. 101 (Malters) - Joint resolution to aid in protecting the Nation's economy against inflationary pressures, and for other purposes; to the Committee on Banking and Currency.

Inland Waters Rules for Prevention of Collisions: H. R. 2234 (Boykin) - A bill to amend the rules for the prevention of collisions on certain inland waters of the United States and on the western rivers; to the Committee on Merchant Marine and Fisheries.

Interior Department Reorganization: H. R. 293 (Hoffman of Michigan) - A bill to effectuate recommendations relating to the Department of the Interior of the Commission on Organization of the Executive Branch of the Government; to the Committee on Interior and Insular Affairs. (This bill makes no provisions for commercial fisheries functions.)

Transfer of Commercial Fisheries Functions from Interior to Commerce: H. R. 294 (Hoffman of Michigan) - A bill to expend the activities of the Department of Commerce in accordance with the recommendations of the Commission on Organization of the Executive Branch of the Government; to the Committee on Interstate and Foreign Commerce. (Among other things provides for the transfer of all commercial fisheries functions of the Secretary of the Interior and the Department of Interior to the Secretary of Commerce.)

Labeling of Foreign-Produced Trout Packages: S. 626 (Dworshak) - A bill relating to the labeling of packages containing foreign-produced fresh-water trout sold in the United States, and requiring certain information to appear on the menus of public eating places serving such trout; to the Committee on Interstate and Foreign Commerce.

Price and Wage Controls Suspension: H. R. 995 (Budge) - A bill to amend the Defense Production Act of 1950 so as to suspend price and wage controls until the President or the Congress finds that such

controls are needed; to the Committee on Banking and Currency.

H. R. 308 (Lucas) - A bill to repeal the provisions of the Defense Production Act of 1950 which relate to price and wage controls and the settlement of labor disputes; to the Committee on Banking and Currency.

Reclamation of Federal Resources from Dam and Reservoir Projects: S. 158 (Murray and Mansfield) - A bill to provide for the installation of improvements and facilities needed for the protection, development, and utilization of Federal resources affected by dam and water reservoir projects constructed by the Federal Government, and for other purposes; to the Committee on Interior and Insular Affairs.

Shrimp Import Duty: H. R. 1424 (Willis) - A bill to provide for a 35 percent ad-valorem duty on the importation of fresh, frozen, or processed shrimp; to the Committee on Ways and Means.

Also: H. R. 1713 (Colmer)...

Striped Bass Protection: H. R. 1990 (Delaney) - A bill to protect striped bass from all types of fishing except by hook and line; to the Committee on Merchant Marine and Fisheries.

Titles of States to Lands and Resources Beneath Navigable Waters: H. R. 1711 (Colmer) - A bill to confirm and establish the titles of the States to lands beneath navigable waters within State boundaries and to the natural resources within such lands and waters, to provide for the use and control of said lands and resources, and to provide for the use, control, exploration, development, and conservation of certain resources of the Continental Shelf lying outside of State boundaries; to the Committee on the Judiciary.

ALSO: H. R. 114 (Burlleson)...
H. R. 223 (GOGGS)...
H. R. 312 (MCDONOUGH)...
H. R. 348 (MCARS OF TEXAS)...
H. R. 377 (WILLIS)...
H. R. 371 (BENTSON)...
H. R. 381 (BURLLESON)...
H. R. 440 (FISHER)...
H. R. 629 (TEAGUE)...
H. R. 636 ()...
H. R. 641 (WILSON OF TEXAS)...
H. R. 1398 (LONG)...
H. R. 1422 (THOMPSON OF LA.)...
H. R. 1711 (COLMER)...
H. R. 1941 (THORNBERRY)...
H. J. RES. 37 (HERBERT)...
H. J. RES. 25 (HILLINGS)...
H. J. RES. 40 (MOSHER)...
H. J. RES. 60 (MACK OF WASH.)...
H. J. RES. 117 (UTT)...
S. 234 (DANIEL)...
S. J. RES. 12 (HOLLAND, FOR HIMSELF & 39 OTHERS)...

Some of the above bills do not provide for jurisdiction, use, and control of the subsoil and sea bed of the Continental Shelf lying outside of the original State boundaries.

Title of Texas to Lands and Resources Beneath Navigable Waters: H. R. 381 (Burlleson) - A bill to con-

firm and establish in the State of Texas the title to certain submerged coastal lands of such State and to the natural resources within such lands and the waters above such lands, and for other purposes; to the Committee on the Judiciary.

Tuna Import Duty: H. R. 93 (Souder) - A bill to amend the Tariff Act of 1930, so as to impose a 5-cent per pound duty upon the importation of tuna fish, fresh or frozen (whether or not packed in ice), whole, or headed or eviscerated or both, or filleted, skinned, boned, sliced or divided into portions; to the Committee on Ways and Means.

Water Pollution: H. R. 234 (Byrnes of Wisconsin) - A bill to encourage the prevention of water pollution by allowing amounts paid for industrial waste treatment works to be amortized at an accelerated rate for income-tax purposes; to the Committee on Ways and Means.

Also: H. R. 606 (Simpson of Pennsylvania)...

PRESIDENTIAL MESSAGE:

Report on Inclusion of Escape Clauses in Existing Trade Agreements, House Document No. 54, January 9, 1953 (83d Congress, 1st Session), 4 p., printed. A message from the President of the United States transmitting a report on the inclusion of escape clauses in existing trade agreements, pursuant to subsection (B) of section 6 of the Trade Agreements Extension Act of 1951 (Public Law 50, 82d Cong.).

CONGRESSIONAL REPORTS:

Committee reports on bills reported in this section of interest to the fishery and allied industries (available only from the committee submitting the report).

Investigation and Study of the Seaward Boundaries of the United States, House Report No. 2515 (January 2, 1953, 83d Congress, 1st Session), 22 p., printed, to accompany H. Res. 576, directing the Committee on Interior and Insular Affairs to conduct an investigation and study of the seaward boundaries of the United States and Alaska to determine how to fix the seaward limits of the territorial waters of the United States, and the seaward boundaries of the United States and Alaska. Subcommittee did not try to give a definitive answer to the problem as time was too short to attempt more than a definition of the problem. Subcommittee is convinced that the inquiry should be continued in next Congress. Report outlines the complex economic, legal, and policy questions involved. Subcommittee does not believe it practical for a congressional committee to draw the seaward boundaries of inland waters. Congress should establish the criteria for such a line and declare the general and controlling principles under which it is to be fixed. The job of applying these rules should be delegated to a commission which should be directed to fix the line by actual survey and report the same to Congress for its approval.





CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

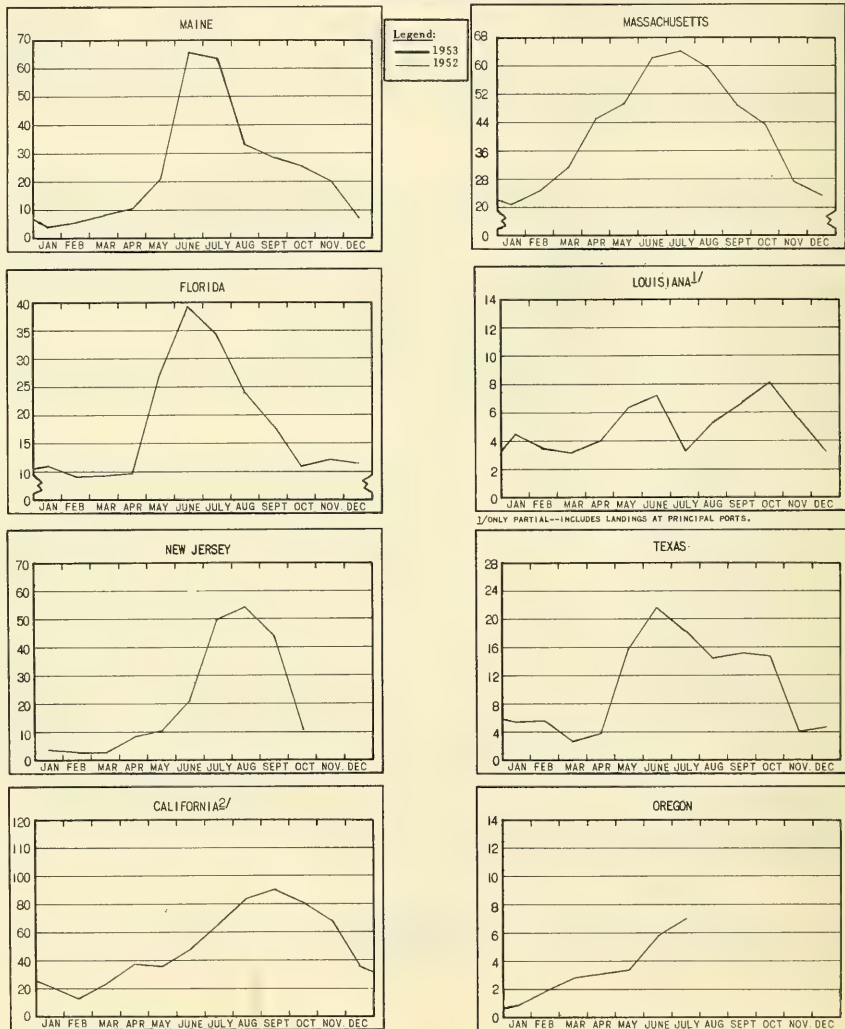
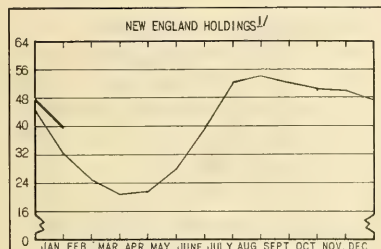
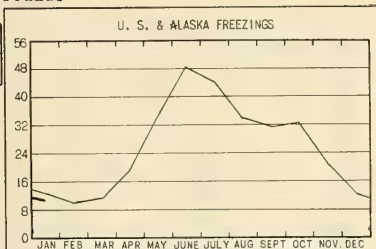
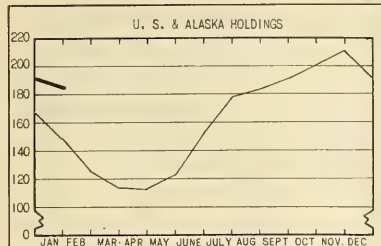
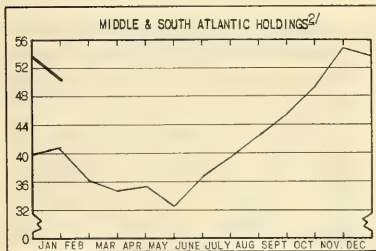


CHART 2 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

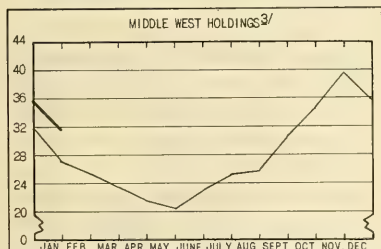
In Millions of Pounds



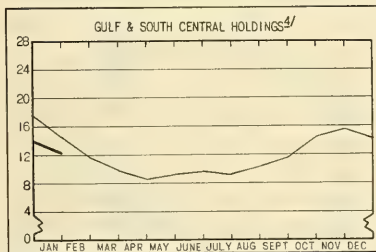
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.



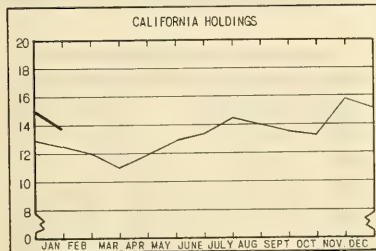
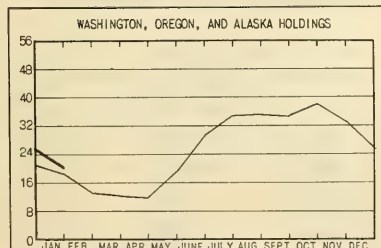
^{2/}ALL EAST COAST STATES FROM N. Y. SOUTH.



^{3/}OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.



^{4/}ALA., MISS., LA., TEX., ARK., KY., & TENN.



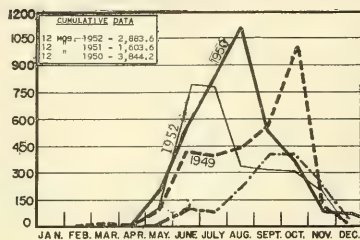
*Excludes salted, cured, and smoked products.

CHART 3

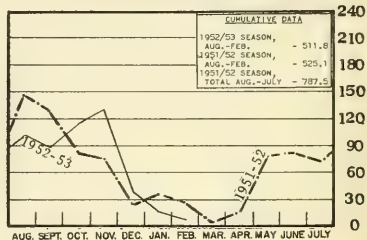
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

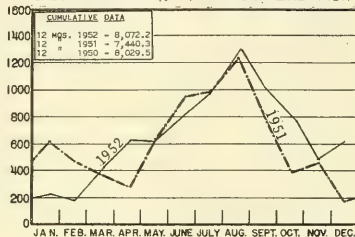
MAINE - SARDINES, ESTIMATED PACK



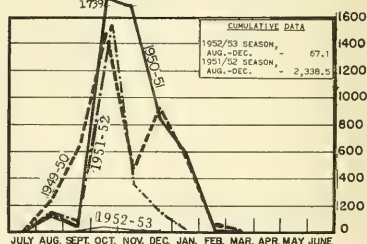
UNITED STATES - SHRIMP



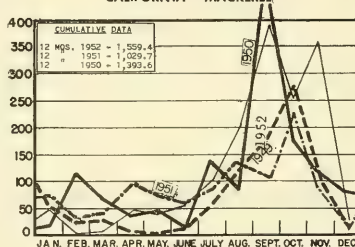
CALIFORNIA - TUNA, AND TUNA-LIKE FISH



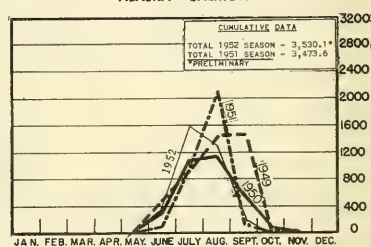
CALIFORNIA - PILCHARDS



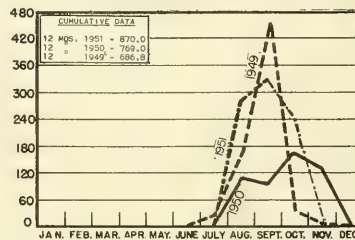
CALIFORNIA - MACKEREL



ALASKA - SALMON



WASHINGTON - PUGET SOUND SALMON



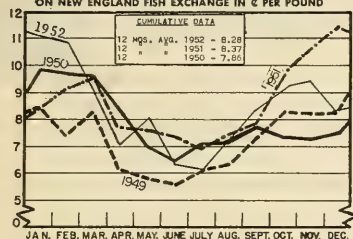
STANDARD CASES

Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	—	5 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tail	16 oz.

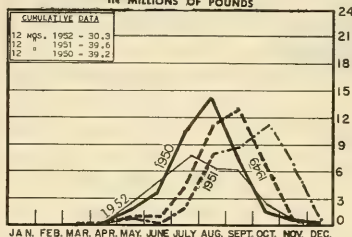
CHART 4

PRICES, IMPORTS, and BY-PRODUCTS

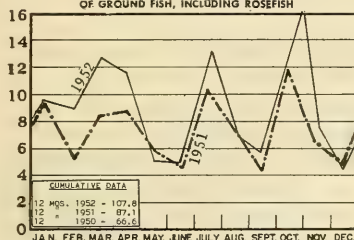
BOSTON - WEIGHTED AVERAGE PRICE
ON NEW ENGLAND FISH EXCHANGE IN ¢ PER POUND



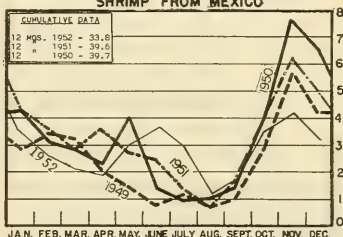
MAINE - IMPORTS OF FRESH SEA HERRING
IN MILLIONS OF POUNDS



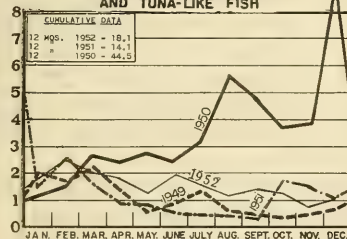
U.S. - IMPORTS OF FRESH & FROZEN FILLETS
OF GROUND FISH, INCLUDING ROSEFISH
In Millions of Pounds



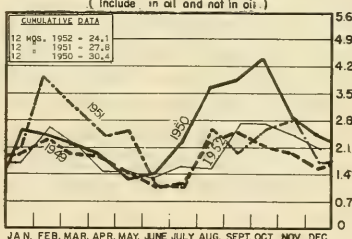
U.S. - IMPORTS OF FRESH AND FROZEN
SHRIMP FROM MEXICO



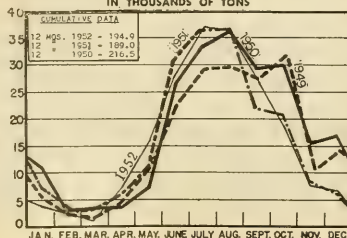
U.S. - IMPORTS OF CANNED TUNA
AND TUNA-LIKE FISH
In Millions of Pounds



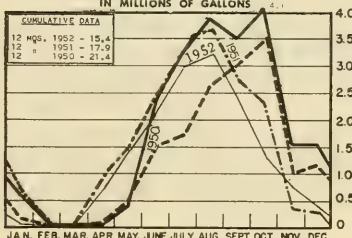
U.S. - IMPORTS OF CANNED SARDINES
(Include in oil and not in oil.)

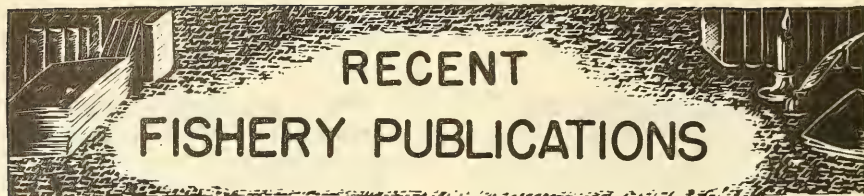


U.S. & ALASKA - PRODUCTION OF FISH MEAL
IN THOUSANDS OF TONS



U.S. & ALASKA - PRODUCTION OF FISH OIL
IN MILLIONS OF GALLONS





RECENT FISHERY PUBLICATIONS

Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR.-FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-811	- Alaska Fisheries, 1951, Annual Summary, 6 p.
CFS-812	- Manufactured Fishery Products, 1950, Annual Summary, 6 p.
CFS-818	- Florida Landings, September 1952, 6 p.
CFS-819	- Mississippi Landings, September 1952, 2 p.
CFS-823	- Frozen Fish Report, December 1952, 8 p.
CFS-824	- Mississippi Landings, October 1952, 2 p.
CFS-825	- Florida Landings, October 1952, 6 p.
CFS-826	- Maine Landings, October 1952, 4 p.
CFS-827	- Texas Landings, November 1952, 4 p.
CFS-828	- Fish Meal and Oil, November 1952, 2 p.
CFS-829	- Massachusetts Landings, October 1952, 7 p.
FL -160	- Partial List of Fishery Periodicals (Revised), 9 p.
FL -162	- Aquatic Biology and Oceanography--A Selected List of Books, 12 p.
FL -3360	- Quarterly Outlook for Marketing Fishery Products, January-March 1953, 36 p.
SL -107	- Firms Canning Fish and Shellfish Specialties, 1951 (Revised), 5 p.

Number	Title
SSR-Fish. No. 76	- Migrations and Habitat of the Tuna (<i>Thunnus thynnus</i> L.), Studied by the Method of the Hooks, with Observations on Growth, on the Operation of the Fisheries, etc., by Professor M. Sella (Translated by Wilvan G. Van Campen), 22 p., illus., July 1952.
SSR-Fish. No. 89	- <u>Offshore Fishing in Bristol Bay and Bearing Sea</u> , by Joseph T. Barnaby, 32 p., illus., processed, October 1952. Deals with the life history of the salmon, the salmon fishery as carried on by United States nationals, the regulations imposed on the fisheries of Alaska by the United States Government, and the results of the experimental offshore fishing carried on by the U. S. Fish and Wildlife Service during the years 1939, 1940, and 1941.

Sep. 336 - Sea-Food Products in Armed Forces Rations.

Sep. 337 - A Report on the Cuban Tuna Fishery.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Factors Influencing the Orientation of Migrating Anadromous Fishes, by Gerald B. Collins, Fishery Bulletin 73 (From Fishery Bulletin of the Fish and Wildlife Service, Volume 52), 25 p., illus., printed, 20 cents, 1952. The influence of certain physical and chemical characteristics of water upon the orientation of one type of anadromous fish was examined by presenting the migrating fish with a choice between two channels with different water characteristics. The orientative influence of the water properties was measured by the number of fish selecting each

channel. The reactions of more than 8,000 fish of the genus *Pomolobus*--alewife, *P. pseudoharengus* (Wilson), and glut herring, *P. aestivalis* (Mitchill)--were tested as the fish migrated upstream through the Herring River at Bourneville, Mass., toward their spawning area. Presented with a choice of waters having different temperatures, 77 percent of the fish entered the channel with the warmer water when the temperature difference continuously exceeded 0.5° C. The response of the fish to temperature differences near the threshold difference decreased as the

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temperature level of the water increased. Presented with a choice of waters having different amounts of free CO₂, 72 percent of the fish entered the channel with the water having the lower CO₂ content when the free CO₂ difference exceeded 0.3 ppm. The sex of the fish appeared to have no influence on its response to differences in CO₂ or temperature. Experiments indicated that velocity and turbulence can influence orientation. The relative orientative influence of CO₂ and temperature, when the two factors were in opposition, was shown to depend on their relative differences of magnitude. Behavior of the fish during the experiments indicated that the orientation was accomplished by a method of "trial" involving both movement of the fish and a comparison of intensities of stimulations which were successive in time.

Propagation and Distribution of Food Fishes for the Calendar Years 1944-1948, by O. Lloyd Meehan, E. J. Douglass, and Lee M. Duncan, Statistical Digest 24, 84 p., printed, 25 cents, 1952. Describes the procedure of the Federal fish-cultural stations in the production and stocking of fish; coordination of Federal hatchery program with programs of other agencies; station output; egg collections; distribution operations; and assignment of fish and fish eggs to Territories and foreign countries. Also includes statistical data for the calendar years 1944-1948 on fish and fish eggs produced, and assigned to Federal agencies and State fish commissions. Output of fish and fish eggs by stations, fish eggs collected, and distribution of fish by States are also covered. Fish salvaged and restored to original waters is given for 1945 and 1946.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

"Age Composition of the Southern California Catch of Pacific Mackerel for the 1951-52 Season," by John E. Fitch, article, California Fish and Game, January 1953, vol. 39, no. 1, pp. 141-146, printed. California Department of Fish and Game, San Francisco, Calif. This is the second report on the age composition of the Pacific mackerel (Pseudotolithus diego) catch for 1951/52 in which some 31-1/3 million pounds of mackerel were landed.

(Alaska) 1951 Annual Report, Report No. 3, 84 p., illus., printed. Alaska Fisheries Board and Alaska Department of Fisheries, Juneau, Alaska, 1952. Summarizes the activities of the Alaska Fisheries Board and the Alaska Department of Fisheries of 1951. Describes the biological investigations; and the predator control, watershed management, and sport-fish programs. Discusses stream inspection and enforcement of fishery regulations. This report also contains statistics on the number of operating salmon canneries; total salmon pack by districts for all Alaska (1942-1951); value of canned salmon—initial price per case, approximate total value per species, and total for all species (1942-1951); number of salmon taken in 1952 by gear and species in each geographic section of Alaska; production (quantity and value) of 24 Alaskan fishery products (1942-51); a financial statement; and a discussion of the plans of the Department and its future outlook. A chronological history of the salmon canneries of Central Alaska from 1882 to 1950 is also included.

"California Marine and Fresh Water Sport Fishing Intensity in 1951," by Frances M. Clark, article, California Fish and Game, January 1953, vol. 39,

no. 1, pp. 115-125, illus., printed. California Department of Fish and Game, San Francisco, Calif. Discusses a survey made in 1951 which was designed to measure sport-fishing intensity in four localities: fresh water, San Francisco Bay and Delta area, ocean and bays north of Santa Barbara, and ocean and bays south of Santa Barbara.

(Ceylon) Fish Farming in Malaya (As a Guide to Fish Farming in Ceylon), by E. R. A. de Zylva, Bulletin No. 4, 21 p., illus., printed. Department of Fisheries, Colombo 3, Ceylon, August 8, 1952. Describes the types of fish most commonly used in fish farming in Malaya, construction of fish ponds, the fry trade, stocking the ponds, and harvesting the fish.

(Colony of Singapore) Report of the Fisheries Department, 1951, by T. W. Burdon, 97 p., illus., printed, British Malaya \$2.00 (approximately 60 U. S. cents). Government Publications Bureau, Singapore, 1952. Contains a general review of the fishing industry of the Colony during 1951. Discusses the availability of fresh fish; inventory of the fishing industry (number of fishermen, licensed fishing boats, details of power-propelled fishing boats, licensed fishing gear, and pond cultivation of fish); transportation and marketing; fresh fish prices; prices of materials used to produce fishing gear; trade in salted and dried fish; and trade in other marine products.

(Delaware) Annual Report of the Delaware Commission of Shell Fisheries of the State of Delaware for the Fiscal Year July 1, 1951 to June 30, 1952, 7 p., processed. The Delaware Commission of Shell Fisheries, Dover, Del., 1952. Describes

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the activities of the Delaware Commission of Shell Fisheries for the fiscal year ending June 30, 1952. Also includes a statement of revenue receipts and a financial statement for the same period. Amounts of seed oysters harvested and oyster shells planted in Delaware are also given.

East African Fisheries Research Organization Annual Report, 1951, 52 p., illus., printed. East African Fisheries Research Organization, P. O. Box 343, Jinja, Uganda. Discusses the growth and sexual development of fish under tropical conditions; hydrology and algology of the Buvuma Channel; entomology (especially the species of insects which live in the mud and upon which certain fish feed); mollusca (aquatic snails which form an important element in the food of many fish); and the fish which live in tropical waters.

An Economic Evaluation of Marine Fisheries Affected by Industrial Wastes, by Donald M. Clifford, 17 p., processed. Prepared for the Atlantic States Marine Fisheries Commission in cooperation with the U. S. Fish and Wildlife Service (the primary research agency of the Commission). The report is primarily concerned with the effect of industrial wastes upon marine fisheries and the resulting economic loss to the states of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.

Initially it was planned to be the first of three reports which would include all the Atlantic coastal states. The information compiled for the New England states (more specifically in the conclusions of the report) indicates, when local variables are considered, that similar conditions exist all along the Atlantic coast with respect to the problem of industrial pollution. The body of this report consists of five parts, one for each state of the North Atlantic section of the Commission. For each state there is a description of principal waters which anadromous or inshore marine fisheries are known to inhabit. Any information regarding the lethal or detrimental effects of industrial wastes upon these fisheries is also noted. The concluding paragraphs of each section discuss the various opinions of the state officials regarding the impact of industrial wastes upon their fisheries. Appended to the report is a short study of the restricted shellfish areas of the State of Maine, entitled the "Maine Clam Study." The study is an attempt to evaluate the clams lost to the State of Maine due to pollution.

Eleventh Annual Report of the Atlantic States Marine Fisheries Commission (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 37 p., printed. Atlantic States Marine Fisheries Commission, Mt. Vernon, N. Y., December 1, 1952. In this annual report the Commission reports progress on fishery research projects initiated and carried on by the Commission and on its behalf by the U. S. Fish and Wildlife Service. Under the North Atlantic Section of the report are included discussions of projects dealing with lobster, hard-shell clams, ocean perch, shad, yellowtail, freezing fish in the round at sea, reconstruction of the Service's Woods Hole Laboratory, proposed Federal-State striped bass program, exploratory tuna fishing, catch statistics, and a proposed fishery college in Massachusetts. Under the

Middle Atlantic Section there is a discussion of projects dealing with shad, clams, gray sea trout (weakfish), Hudson River and Delaware River shad, conferences between New Jersey and Delaware commissioners, Delaware River Shad Management Act, proposed Federal-State cooperative striped bass study, and catch statistics. The Chesapeake Bay Section includes discussions of projects concerned with croaker, blue crab, shad, Chesapeake Bay Institute, proposed Federal-State striped bass program, and Potomac River concurrent oyster laws. Under the South Atlantic Section a discussion of the following programs is included: shrimp, shad, carrying shrimp in refrigerated sea water, cooperative Federal-State research program, license fees and severance taxes, and catch statistics. Another section of the report deals with the pollution project; State catch statistics; Northwest Atlantic Fisheries; Amendments No. 1 and No. 2 to the Atlantic States Marine Fisheries Compact--Common Fisheries and Inland Waters; fisheries research; and legislation needed.

"FAO Fisheries Statistics," Reprint from Monthly Bulletin of Agricultural Statistics and Economics, November 1952, 4 p. Food and Agriculture Organization of the United Nations, Rome, Italy. Includes statistics on fish landings in 10 countries in 1952 and external trade in fish and fisheries products of 9 importing and 9 exporting countries in 1952, compared with the corresponding period of 1951.

Fish and Wildlife in the Tennessee Valley, 19 p., illus., printed. Tennessee Valley Authority, Division of Forestry Relations, 1950. The fish and wildlife activities of the Tennessee Valley Authority are directed almost entirely to the multiple-purpose water impoundments on the Tennessee River and its tributaries. This report describes certain TVA program activities which contribute toward maintenance of fish and wildlife resources, types of fish, extent and value of the sport fishery, permanence of fish production, percentage of crop harvested, growth rate of fish, and mussel production.

Fish Recipes, Extension Bulletin 313, 16 p., illus., printed. Michigan State College, Cooperative Extension Service, East Lansing, Mich. A few recipes, collected from a series of fish recipe folders previously published by the Michigan State College Agricultural Experiment Station, are presented in this bulletin. Also includes descriptions of Michigan fish, methods of cooking, selection of fresh fish, and instructions for scaling and cleaning, filleting, and freezing fish.

Fishing Industry Research Institute Fifth Annual Report of the Director (1st April, 1951-31st March, 1952), 19 p., printed. Fishing Industry Research Institute, Cape Town, South Africa. A brief summary is given of: (1) the general activities of the Fishery Industry Research Institute, Cape Town, South Africa, (2) progress on research investigations during the period April 1, 1951, to March 31, 1952, and (3) the results of the routine inspection and analysis services. Research projects included studies on: (1) freezing, preservation, curing, and inspection of stockfish; (2) freezing and canning of rock or spiny lobster; (3) canning of pilchards, maasbanker, snoek, mack-

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erel, bluefin, abalone, and mussels; (4) fish flour for human consumption; and (5) storage and analysis of fish meal.

--F. T. Piskur

Florida's Controlled Seining Program (with a discussion of general fish management principles), by John F. Dequine, Fish Management Bulletin No. 1, 39 p., illus., printed. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida, 1952. Fishery surveys were started in 1947 and 1948 in Lake George and Lake Okeechobee and a number of other larger lakes in Florida for the purpose of finding methods of improving fishing and determining the proper place of commercial fishing in fresh waters. This report summarizes the recommendations made for the continued management of the waters studied, and describes the principles of fish management and the controlled seining program. Resolutions authorizing controlled seining passed February 4, 1952, and amended June 2, 1952, by the Florida Game and Fresh Water Fish Commission, and comments of a panel of fishery scientists on survey findings in Lake George and Okeechobee are quoted.

"Further Observations on the Distribution of Striped Tuna, Katsuwonus pelamis L., in Eastern Australian Waters, and Its Relation to Surface Temperature," by J. P. Robins, article, Australian Journal of Marine and Freshwater Research, October 1952, vol. 3, no. 2, pp. 101-110, illus., printed, 7s. 6d. per issue (approx. 85 U.S. cents). Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne, C.2, Victoria. Describes an investigation between August 1950 and August 1951 of the distribution of striped tuna in eastern Australian waters, as indicated by numbers of fish caught per line trolled. The distribution extended from at least as far north as Port Macquarie, New South Wales, to 40 miles south of Tasman Island, Tasmania—much farther south than observed in previous years. Occurrence in abundance was seasonal in any specific area off the coast. Movement to the south from the mid-north coast of New South Wales began in late spring; movement north from the east Tasmanian coast began in mid-autumn. Striped tuna were taken in eastern Australian waters with temperatures between 14.7° C. and 20.8° C. (about 59° F. and 69° F.), but occurred most plentifully between temperatures of 16.0° C. and 18.0° C. (61° F. and 64° F.). They had a preference for water of specific temperatures in the areas in which they occur seasonally. Seasonal movement north and south showed a strong correlation with seasonal changes in water temperatures. Commencement of movement northwards from the south appeared to be influenced by downward change in temperature, which brought about the lower limit of the critical temperature tolerated; this change was coincident with the onset of the seasonal westerly winds. Degree of southerly penetration is related to temperature, whose seasonal fluctuation could explain "abnormal" years.

Growth of the American Oyster, CRASSOSTREA VIRGINICA (Gmelin) in Florida Waters, by Robert M. Ingle and Charles E. Dawson, Jr., Contribution No. 74, 12 p., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 2, no. 2, pp. 393-404). The Marine Laboratory, University of Miami, Coral Gables, Fla.,

1952. Describes a study conducted from May 1949 to August 1951 on the growth of the American oyster, Crassostrea virginica, in Florida waters. Basic growth curves remained the same despite seasonal environmental changes. Oysters setting in the fall had very nearly the same growth pattern as those which attached in the spring. Minor aberrations in all states of growth were encountered in areas of good growing conditions but the fundamental pattern did not differ. Oysters which had been periodically exposed exhibited rapid growth when transferred to places where they remained covered by water at all times. Those which continued to be exposed had a diminished growth rate. Coon bars which exist in Apalachicola Bay support an inferior, small oyster because the individual oysters are exposed at low tide. Extremely long and intensive spawning seasons did not alter the basic growth pattern. Growth was continuous throughout the year. Oysters of Apalachicola Bay which are of low lysogen content and presumably low vigor (possibly induced by rapidly fluctuating salinities) showed remarkably rapid growth rates.

"The Jack Mackerel, Trachurus symmetricus: A Review of the California Fishery and of Current Biological Knowledge," by Phil M. Roedel, article, California Fish and Game, January 1953, vol. 39, no. 1, pp. 45-68, illus., printed. California Department of Fish and Game, San Francisco, Calif. Until 1947, the jack mackerel (Trachurus symmetricus) was of minor commercial importance. In 1947 it emerged as a major variety and has remained among the leaders since that year. According to this report, its sudden rise and continued high rank are attributable in a large part to the series of poor seasons experienced by the sardine and Pacific mackerel fisheries. In the earlier years the sardine fleet sought sardines primarily, and Pacific mackerel when they were available or when the sardine season was closed. Jack mackerel catches were in a large part incidental. Jack mackerel are still less highly regarded than are the other two, but they remain available on the fishing grounds. Another factor affecting the fishery's rise is the increased use of depth-sounding devices first installed on California seiners in 1944 and virtually standard equipment within two or three years. The rise of the jack mackerel fishery occurred at the time this equipment was first widely employed, and there is some evidence to show that jack mackerel tend to school somewhat below the surface so are not often observed by visual scouting. If this schooling habit can be confirmed, it would help explain the low catches of the earlier years. For even though these catches were largely accidental, one would anticipate that the total tonnage caught would have been greater if the fish had been as available to the fishermen as they are at present with the use of depth-sounding devices. An alternative explanation is a rise in abundance of jack mackerel concurrent with the decline of sardine and Pacific mackerel. Included in this report are descriptions of the jack mackerel fishery prior to 1926; catch trends, 1926-1951; the Los Angeles region fishery; the Santa Barbara region fishery; the Monterey region fishery; a discussion of the biological knowledge of the jack mackerel; and an estimate of the status of the fishery.

The Job Ahead for Defense Mobilization (Eighth Quarterly Report to the President by the Director of

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Defense Mobilization), 54 p., illus., printed, 30 cents. Office of Defense Mobilization, Washington, D. C., January 1, 1953. (For sale by Superintendent of Documents, Washington 25, D. C.). This is the eighth quarterly report on the defense mobilization program of the United States. Included are discussions on defense mobilization in mid-passage, producing military equipment, industrial expansion and the relief of shortages, completing and maintaining the mobilization base, meeting our needs for manpower, stabilizing prices and wages, and NATO: The need for an integrated defense production program.

- (OPS) Directory of Commodities and Services Exempted or Suspended from Price Control (Covers all regulations issued through December 18, 1952), third edition, 73 p., processed, 35 cents. Jurisdiction and Distribution Branch, Executive Office for Price, Office of Price Stabilization, Washington, D. C., 1952. (For sale by Superintendent of Documents, Washington 25, D. C.) Contains an alphabetical index of commodities (including fishery products) and services which have been exempted or suspended from price control. Also included is a list of OPS regulations which contain exemption or suspension provisions, and the text of the agency memoranda setting forth the standards for exempting and suspending commodities and services from price control. The alphabetical index specifies the commodity or service exempted, the regulation or other authority effecting exemption, and the type of action (exemption or suspension).

Regulation and Investigation of the Pacific Halibut Fishery in 1951. Report of the International Fisheries Commission, No. 18, 29 p., illus., printed. International Fisheries Commission, Seattle, Wash., 1952. A brief review of the Commission's administrative and investigational activities in 1951 with reference to the Pacific Coast halibut fishery. In 1951 the Commission completed its twentieth year of regulation of the halibut fishery and carried forward the statistical and biological investigations which form the basis for the regulations. Also presented are the 1951 regulations, statistics of the fishery, landings of incidentally-caught halibut, the fishery in Areas 2B and 2C, changes in composition of catches, and tagging experiments.

Scientific Researches of Fisheries Carried on Under Fisheries Agency, Japanese Government, 28 p., illus., printed. Fisheries Agency, Tokyo, Japan, 1952. Brief accounts of the eight regional laboratories, under the jurisdiction of the Fisheries Agency, which are assigned to work on fisheries problems.

Some Reactions of Pelagic Fish to Light as Recorded by Echo-Sounding, by I. D. Richardson, Fishery Investigations Series II, vol. XVIII, no. 1, 22 p., illus., printed, 4s. net (55 U. S. cents). Her Majesty's Stationery Office, London, England, 1952. Describes a number of echo-sounder tracings showing the way in which fish shoals react to daylight and electric light. Shoals of sprats and herrings show a diurnal migration, coming up towards the surface at night and moving down during the day, according to this report. The extent of this vertical migration varies in different areas of the southern North Sea. The diurnal migration takes place in both feeding and non-

feeding fish. The downward movement of the shoals is shown to be associated with increase in light intensity, which is thought to be the operative cause. It has been shown that the fish remain within a certain light intensity during the day. The fish would therefore have to swim downwards to remain in that light intensity. The level at which the shoals remain during the night appears to be definite, and specific gravity seems to be the most likely cause to investigate. An upward movement of the herring shoal, above that of the night level, immediately precedes the downward movement associated with increasing light at dawn. A similar upward movement is seen at dusk before the shoals settle to their night level. The behavior of the East Anglian herring shoals is analyzed and found to be essentially similar to that of herring shoals in other areas of the North Sea. Herring shoals have been shown to avoid electric light of certain intensities. Examples are given of the way in which pilchards and certain fish fry are attracted to electric light.

"State-wide California Angling Estimates for 1951," by A. J. Calhoun, article, California Fish and Game, January 1953, vol. 39, no. 1, pp. 103-113, printed. California Department of Fish and Game, San Francisco, Calif. The results of the 1951 angling survey in California are summarized and discussed briefly by kinds of fish and by departmental administrative regions.

Studies on the Effect of Dredging Operations upon Fish and Shellfish, by Robert M. Ingle, Technical Series No. 5, 29 p., illus., printed. The Division of Oyster Culture, Board of Conservation, Tallahassee, Fla., October 1952. Describes investigations made to determine the effects of dredging operations upon fish and shellfish in the vicinity of Great Point Clear, Alabama. Damage to scalefish and motile crustacean was not observed, even within 25-50 yards of an active dredge. Shellfish were not found to suffer damage when suspended from the dredge itself. Damage due to larger particles of mud occurred on the bottom in the immediate neighborhood of the dredge, but did not extend beyond 400 yards. Because momentary conditions of tide, speed of current, speed of dredging vary, and variations exist in various bay bottoms, every situation merits separate consideration, according to this report. Controlled dredging is suggested as the best solution. By this method the dredging activity is coordinated with local conditions, spatial and temporal. In the areas under consideration (West Florida and Alabama), controlled dredging should begin to operate at 400 yards distance from live oyster reefs. There is some evidence that dredging stirs up organic debris resulting in a beneficial effect to shellfish and crustaceans.

(Sweden) Fiske År 1950 (Fishing in 1950), 55 p., printed in Swedish with a summary in English. Sveriges Officiella Statistik, Jordbruk Med Binaringar, Statistiska Centralbyrån, Stockholm, Sweden, 1952. Kungl. Boktryckeriet, P.A. Norstedt & Soner, Stockholm, Sweden. An account of the fisheries of Sweden in 1950. The fishery statistics mainly cover data relating to salt-water fishing. Data covered are the number of fishermen, fishing gear, and fishing craft; quantity and value of landings in the salt-water fisheries; fishery in the Baltic and in the Sound; West Coast

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fishery; preparation of fish; landings in foreign countries of fish caught by Swedish fishermen and landings in Sweden of fish caught by foreign fishermen; and fresh-water fishery. According to this report, salt-water fishing was carried on by 22,130 persons in 1950-51, 810 were professional fishermen and 8,320 followed fishing as a secondary occupation. Principal fish and shellfish taken included herring, cod, eel, salmon, mackerel, sprat, haddock, and shrimp. The most important species was herring (including the Baltic herring).

Third Report to Congress on the Mutual Security Program... for a strong and free world, 26 p., printed, 20 cents. Mutual Security Agency, Washington, D. C., December 31, 1952. (For sale by Superintendent of Documents, Washington 25, D.C.). Covers the operations of the Mutual Security Program for the period from July 1 to December 31, 1952.

(United Kingdom) "The Seaweed Industry," by R. P. Bower, article, Foreign Trade, December 13, 1952, vol. 12, no. 311, pp. 7-8. Foreign Trade Service, Department of Trade and Commerce, Ottawa, Canada. Work by the Institute of Seaweed Research (Scotland) is uncovering new industrial and medical uses for seaweeds. The research formerly financed by the United Kingdom Development Commission by allotment of funds to the

Scottish Seaweed Research Association has now been taken over by the Institute of Seaweed Research and is financed directly by the Treasury. After the Institute had established the availability of quantities of seaweed, it pursued a program along the following lines: (1) Expansion of earlier work in ecology and survey; (2) Fundamental and applied algal chemistry; and (3) Harvesting and handling seaweed and production of seaweed chemicals. Currently seaweeds are used for production of alginates for use as a gel in cosmetics and foodstuffs, as a stabilizer in ice cream, salad dressings, etc., and as a component of films and transparent paper. Other uses are in rubber latex, textiles, and in making fine wools. Seaweed is also used as a fertilizer. Research is being continued to discover further agricultural and medical uses for seaweed. Current processing lines indicate that seaweed can be used for farm-animal feed. "Laminarin," derived from seaweed, has shown possibilities as substitute for blood plasma and as a surgical powder. The harvesting of growing seaweeds has not been satisfactorily solved, but experiments are continuing. Interest has been shown by Canadian firms handling florist's supplies in a species of sea growth which occurs in the Thames Estuary. The material is dried, treated, and dyed and is used as a floral decoration.

--F. T. Piskur



CORRECTION

In the article "Japanese 1952 North Pacific Salmon-Fishing Expedition" contained in this issue, page 4, last paragraph, line 3, "400 miles south" should read "90 miles south."

PARTIAL LIST OF FISHERY PERIODICALS

A Partial List of Fishery Periodicals, Fishery Leaflet 160, was recently revised by the Service's Branch of Commercial Fisheries. This list gives the names and addresses of United States, foreign, and world commercial fishery periodicals and state fishery periodicals.

Free copies of Fishery Leaflet 160 are available from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

SPORT FISHING IN CALIFORNIA

Upon analyzing the returns of its 1951 annual postal survey of angling license buyers, the California Department of Fish and Game arrived at the following conclusions:

MOST OF THE CALIFORNIA SPORT FISHERMEN'S TIME--56 PERCENT--IS SPENT FISHING ON INLAND FRESH WATERS.

TWENTY-TWO PERCENT OF THE STATE'S COLLECTIVE ANGLING EFFORT IS SPENT IN OCEAN WATERS SOUTH OF SANTA BARBARA; 10 PERCENT NORTH.

SAN FRANCISCO BAY AND DELTA WATERS ACCOUNTED FOR 12 PERCENT OF THE FISHING EFFORT OF THE ONE MILLION LICENSE HOLDERS.

THE AVERAGE FISHERMAN FISHED 25 DAYS, FOR A TOTAL OF APPROXIMATELY 25,000,000 FISHING DAYS IN CALIFORNIA WATERS IN 1951.

The big picture of the angler's habits is used by the State Agency to determine, among other things, a fair allocation of its funds between fresh-



A SPORT FISHERMAN'S CATCH.

and salt-water conservation activities. Ocean anglers may look forward to a greater share of the Department's attention in 1953 on the basis of the 1951 poll, as it indicates an increase of 25 percent in the number of ocean anglers.

The author of the article, which revealed the above results, believes that part of the change in fishing interest may have resulted from the recent dry years which impaired fresh-water fishing on southern California inland lakes. "Having learned the enjoyment and recreation inherent in salt-water fishing," she writes, "the anglers will continue this activity, and pressure on marine waters will presumably continue to increase."

Among the out-of-state residents who buy California fishing licenses, fresh-water fishing is about four times more popular than ocean fishing, the Department learned from the returns of 30,000 cards sent out.

--OUTDOOR CALIFORNIA.

VOL. 14, NO. 2, JANUARY 14, 1953.

CALIFORNIA DEPARTMENT OF FISH AND GAME.

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Editorial Assistant--Ruth V. Keefe

Illustrator--Gustaf T. Sundstrom

Compositors--Jean Zalevsky and Betty Coakley

* * * * *

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Pp. 18, 19, and 23--G. T. Sundstrom; p. 44--J. Pileggi

MANUFACTURED FISHERY PRODUCTS, 1951



Manufactured Fishery Products, 1951, C.F.S. No. 833, an annual summary, was recently issued by the Service's Branch of Commercial Fisheries. This 6-page bulletin gives information by species on the quantity and value of fishery products processed by manufacturing establishments and by fishermen. It includes 1951 data on canned fish, fishery byproducts, and packaged fish for the United States; on all fishery products and byproducts produced in Alaska in 1951; and on packaged shellfish and cured products produced in the United States in 1950. Data on manufactured fishery products processed by fishermen are for 1950.

Canned fishery products comprised 55 percent of the total value of all United States and Alaska manufactured fishery products; packaged shellfish accounted for 15 percent; byproducts, 13 percent; packaged fish, 11 percent; and cured fish, 6 percent. The total value for all manufactured fishery products, as reported in this bulletin, amounted to \$547 million.

Copies of C.F.S. No. 833 are available free upon request from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

Robert H. Gibbs, Jr.,
Dept. of Zoology
Stimson Hall
Cornell University
Ithaca, N. Y. 14850

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